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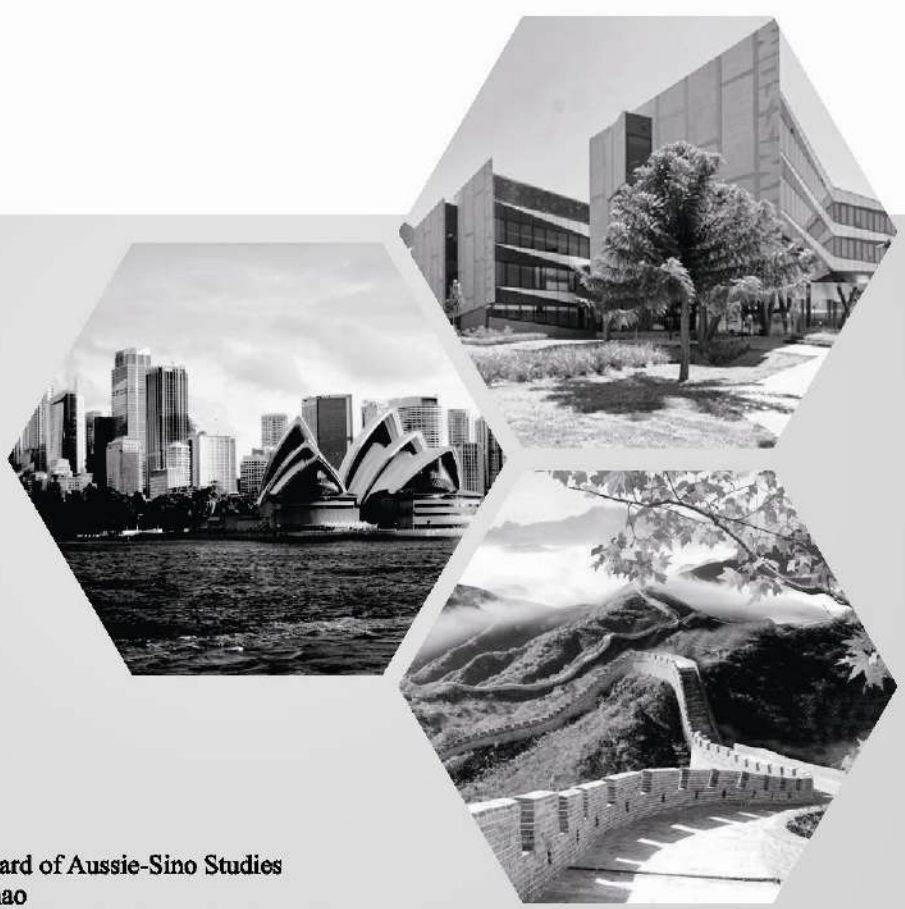

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Contents

Misconceptions about the Cultivation of Communicative Competence in College English Teaching in China

Xia Yu [a b]

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Abstract: This paper analyzes three common misconceptions about the understanding of communicative competence in tertiary foreign language teaching in terms of skill development, target location and content definition. It is argued the misunderstanding rests on the fallacy that communicative competence equals to educated native-speakers' language ability that applies in everyday verbal exchanges. Therefore, the current cultivation of communicative competence in higher education is based on native speaker norms, deemphasizing the development of reflective/analytic ability and ignoring written communicative competence. To cope with these problems, a new pedagogic model of English is needed to accommodate the case of English as an international language both in China and other similar educational settings with similar cultural and social backgrounds.

Key words: Communicative competence, College English Teaching, China

Introduction

Communicative competence (CC) was proposed by Hymes (1972) in reaction to Chomsky whose notion of competence involves only knowing how to compose correct sentences, having nothing to do with the actualization of language behavior, communicative or otherwise. Hymes' (1972: 282) 'communicative competence' was then defined as 'the capabilities of a person' and 'it is dependent upon both knowledge and use', extending Chomsky concept of competence to include knowledge of aspects of language other than grammar (i.e., of what is feasible, appropriate and actually performed) and ability for use (i.e., the capacity for implementing, or executing the abstract competence in appropriate, contextualized communicative language use. Bachman (1990) further described what he called Communicative language ability as consisting of both knowledge, or competence, and the capacity for implementing, or executing that competence in appropriate, contextualized communicative language use. This echoes how Candlin (1986) has described communicative competence:

> … the ability to create meaning by exploring the potential inherent in any language for continual modification in response to change, negotiating the value of convention rather than conforming to established principle. In sum, … a coming together of organized knowledge structures with a set of procedures for adapting this knowledge to solve new problems of communication that do not have ready-made and tailored solutions.

Nearly three decades ago, a special issue of *Applied Linguistics* was devoted to reexamining the concept of CC (among the contributors were Hymes, 1989; and Widdowson, 1989). The ability to use language may, according to Widdowson (1989), have to do with access of pre-assembled and memorized patterns which are relatively independent of the analytic knowledge of grammar. Indeed, the idea of CC 'has been adapted, interpreted, and exploited, keyed in with the concerns of applied linguistics and language teaching pedagogy' (ibid: 128), as Canale & Swain's (1980) account of 'CC' as incorporating grammatical competence, sociolinguistic competence, discourse competence and strategic competence made it a relevant concept for foreign/second language teachers in classroom teaching and a primary goal of language teaching and learning at all educational levels (Brown, 2001). Although the discourses about language teaching in the past four decades have been anchored in the concept of CC (as a theoretical construct, an overarching learning goal, and a pedagogical approach, even a criterion for assessment) (Byrnes, 2006), its legitimacy as a framework for collegiate foreign language study has been interrogated (Schulz, 2006) and raised problematic issues concerning its appropriateness to foreign language teaching in higher education (He & Lin, 2015). I argue in this paper, however, the legitimacy of CC as a goal of teaching and learning in higher education can be fully justified if our understanding of CC as 'a unidirectional, primarily oral mode of

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functional meaning–making' is updated. The purpose of this article is, taking College English Teaching（CET）in China as a focused case, to analyze some common misconceptions about the understanding of CC in tertiary foreign language teaching. By clarifying these misconceptions, I hope that this article will lead to a better understanding of CC and , in turn, better approaches to the cultivation of CC.

1. CC in CET

College English (CE) has been a required course offered by CE departments in Chinese universities, similar to university language centers in many parts of the world. It used to be called 'public English', a name suggesting a 'common core' course learned by all undergraduates of arts, science and engineering other than English majors. The latest document on CET reform entitled *Guidelines on CET* promulgated in 2017 states that the objective of CET is to 'develop students' ability to use English, enhancing cross-cultural communication awareness and communicative competence'. In classroom practice, however, the cultivation of CC has been operationalized or misinterpreted as the use of oral communicative activities such as group work, games, and role-plays, which are commonly used in foreign language classroom in primary and secondary school. This misunderstanding rests on the fallacy that CC equals to educated native-speakers' language ability that applies in everyday verbal exchanges. This idealized and one-sided construal leads to three misconceptions about the cultivation of CC in CET in China, to which I now turn.

2. Misconceptions about the cultivation of CC in CET

2.1 Misconception about skill development in CC cultivation：under-emphasis on written CC

Although communicative competence can be traced to Hymes'(1972) anthropologically inflected view of language as historically and socially situated, its pedagogical focus has remained on information-exchange, usually in the context of oral, face-to-face interaction, offering little space for learners to critically reflect on the ineffability of meaning, the exclusiveness of translation, and the potential symbolic and social excesses of what they say (Warner, 2011), which is creating conceptual and practical ceiling effects that need to be addressed in collegiate foreign language teaching (Byrnes, 2006). In effect, written communication deserves considerable emphasis, as most people normally have a pressing need to communicate in written forms. Even in this modern age of multimedia and high-tech environments, the majority of us still, to a large extent, 'rely on our reading ability in order to gain information or expand our knowledge' (Celce-Murcia, Brinton, & Goodwin, 1996: 118). Unfortunately, the objectives of 'developing students' reading ability and enabling them to use English as a tool to obtain professional information' as defined in the *1985/1986 Syllabus* was replaced by that of 'developing students' ability to use English in a well-rounded way, especially in listening and speaking' in *2007 Requirements*. And the description of 'enabling students to communicate effectively in English in their future study, work and social interaction' in *2007 Requirements* seems to acquiesce in the prominence given to verbal communication or survival and social English skills, for nearly all the English teaching software used in Chinese universities are found to devote to enhancing students' oral competence for daily communication (Cai, 2011). This policy of prioritizing listening and speaking was criticized for deemphasizing academic reading and writing ability which address the students' future need for utilizing English as an international language in their specialized fields (Cai, 2017). Indeed, as Widdowson (1997: 143) reminded, 'professional and academic registers are, for the most part, essentially written varieties, and tend to retain a written mode even when spoken'. Perhaps, it is more important to develop students' academic competence focusing on reading/writing than interpersonal competence focusing on speaking/listening (Saville-Troike, 2006).

2.2 Misconception about content definition in CC cultivation: de-emphasis on reflective/analytic activity

In responding to the policy of prioritizing listening and speaking, there has been a top-down movement to implement communicative language teaching (CLT) at all educational levels in China. The presupposition that 'communicative competence can be said to be an interpersonal rather than an intrapersonal trait' (Savignon, 1983: 8) has resulted in a plethora of classroom activities which stress the former to the neglect of the latter. Many activities in the CLT classroom, such as role or game playing, small-group discussions, brainstorming discourage reflection insomuch as heavy emphasis on overt-response interactional activities, can lead to neglect of contemplation (Tarvin & Al-Arishi, 1991). Such intuitive activities with their stress on conspicuous action and spontaneous response, do not readily articulate with the kind of language use that collegiate language departments as academic units consider to be indispensable for their intellectual presence on campus and in the world of humanities scholarship (Byrnes, 2006). This is because an excess of such sense-based activities, according to Tarvin & Al-Arishi (1991), necessarily decreases the opportunity for reflective activities, promoting phenomenalism (see Hirst, 1973 for more discussion) and intuition while discouraging the use of reflection. In addition, most textbooks following the tenets of CLT encourage personalized activities through which students talk about themselves with their classmates. Talking about self, though motivating learners to talk, are generally considered not being able to elicit the analytical language that collegiate language departments consider pertinent to their intellectual missions (Magnan, 2007). This is because the work skills (including analysis, evaluation, experimentation,

collaboration, communication, abstraction, system thinking, and persuasion) of symbolic analysts are emerging as crucial for success in the 21st century (Warschauer, 2000). With the spread of English as an international language and a shift of authority to nonnative speakers and dialects, it is no longer appropriate to give students a tourist-like competence to exchange information with native speakers; rather, a much more sophisticated communicative competence is needed for presentation of complex ideas, international collaboration and negotiation (ibid). CC, therefore, could take on an entirely new meaning if the chief goal of foreign language programs is to cultivate the ability to read, write, listen, reflect, and to engage students 'in obtaining new knowledge about content and communicating an analysis of how that content operates' (Swaffar, op.cit.: 248-249). This theoretical overhaul requires us to update our understanding of CC as 'a unidirectional, primarily oral mode of functional meaning–making', namely, a turn toward 'appreciations of dialogical communicative performance as a relational and collaborative act of subjective negotiation' (Tucker, 2006: 265).

2.3 Misconception about target location in CC cultivation: native speaker-based standard

The cultivation of CC in CET has hinged upon so called 'Standard English' (i.e., the standard varieties of British and American English), emphasizing the accuracy or appropriateness of pronunciation, vocabulary and grammar. To approximate this goal and model of native learners of English, students are generally intolerable of language errors, paying less attention to meaning and the effectiveness of communication. Adherence to 'standardized native speaker norms' (Alptekin, 2002: 57), according to (Cook, 2007: 240), suggests that 'L2 learning can only lead to different degrees of failure, not degrees of success'. Perfectionistic performance goals are not only unrealistic in practice, but can be devastating because they can 'defeat students who feel that they cannot measure up, and they can frustrate teachers who feel they have failed in their job' (Morley, 1991). Even worse, if the feeling of frustration persists in their English learning, students can develop serious 'language anxiety' (Maclntyre & Gardner, 1991), restraining their willingness to communicate (McCroskey & Richmond, 1990). Moreover, the inexorable spread of English as an international language insinuates that native speaker norms are no longer suitable for the tertiary education for future professionals from non-English speaking countries or regions where the goal of language education is not to produce native speakers but to produce L2 users (Cook, 2007) who are capable of to communicating with 'like-minded people' all over the world (Widdowson, 1997).

3. Conclusion

Although the term communicative competence gradually became the consensus position on how to teach a foreign language at initial levels, communicative competence as a framework for collegiate foreign language study has been interrogated. This might be directly or indirectly connected to the three misconceptions about the cultivation of CC that might be related to the deficits of current discussion on CC, i.e., neglect of the study on CC in written form and lack of research on comprehensibility. The misconceptions are also pertinent to the ignorance of the fact that the battle to become a native speaker is lost before it has begun (Cook, 1999); that is to say, it is both unrealistic and unnecessary to conform to native speaker norms. After all, the goal of language teaching is not to reproduce native speakers in local communities in which people are mediated basically by the spoken language, but to produce register users who are able to communicate with their counterparts largely mediated by the written language in international communities (Du & Guan, 2016). With increasing recognition of English as an international language for global communication, the skills of symbolic analysts are highly valued. Non-native speakers will be required to use English in highly sophisticated communication and collaboration with people around the world, and write persuasively, critically interpret and analyze information in order to carry out complex negotiations and collaboration in English. There is an urgent need for a new pedagogic model of English to accommodate the case of English as a means of international and intercultural communication, insomuch as 'the conventional model of communicative competence, with its strict adherence to native speaker norms within the target language culture, would appear to be invalid in accounting for learning and using an international language in cross-cultural setting' (Alptekin, 2002: 63).

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Register Analysis for Translation Assessment: Compare different translation versions of *Animal Farm*

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Abstract: Register theory is one of the most important theories that we use to analyze texts. This essay mainly talks about register analysis theories. Then use these theories to analysis <Animal Farm> and it's two different Chinese translation versions of one paragraph.

Key words: Register theory analysis, field, tenor, mode

1. Register Analysis

Register is widely applied to systemic functional grammar and social linguistics. British anthropologist Malinowski separated register into context of culture and context of situation when he analyzing the language. The former refers to the culture of the society which speakers belong to. While the later means the actual environment of language. According to the Hallidayan model of language, there are five levels of language, I'd like to mention three of them. The first one is discourse which means sociocultural environment. And the second one is genre which means text type such as contract, invoice etc. Thirdly, it comes to register. Register is determined by genre.

According to Halliday's theories, register comprises three elements: field, tenor and mode.

(1) Field

Field is what the writer going to write about, it describes things that happened or have been talked about. It refers to different subjects, professions, fields, etc.

(2) Tenor

For tenor, it refers to the relationships between two sides of communication. And it includes speakers' social position, their attitude to what happened and what they want to do next.

(3) Mode

Mode shows the form of communicating. It's mainly about what character language plays in communication. And it consists of written language and colloquial speech, formal style and unformal style.

Any change of these three elements would affects the whole register. So when we analyze a sentence or a discourse, we should focus our attention on every variables of register to understand what the writer want to express exactly.

Discourse semantics are determined by register. So each of the elements of register is related to a strand of meaning, which means language metafunctions. Firstly, ideational, it means that discourse can provide a representation of the world or an event. Then, it comes to interpersonal. This function is influenced by tenor in register theories. It enacts social relationships to readers, both source language readers and target language readers. And last, we talk about textual. Textual, of course, determined by what we called mode in register. And this function makes a text hang together in a coherent way.

2. Examples of *Animal Farm*

2.1 Register analysis of the source text

"I merely repeat, remember always your duty of enmity towards Man and all his ways …… No animal must ever live in a house, or sleep in a bed, or wear clothes, or drink alcohol, or smoke tobacco, or touch money, or engage in trade.…… Weak or strong, clever or simple, we are all brothers. No animal must ever kill any other animal. All animals are equal."

This is a speech made by Old Major to inspire other animals to fight for right and free. A speech always has strong power, it can encourage people to do things that they used to be afraid of. This is the linguistic feature of this discourse.

Field: This speech was made to inspire other animals to fight. So what Old Major said must possess logical content, strong emotion and great appeal. And he should also put forward some requests for his listeners to obey. At the end of the paragraph, he summed up his opinion, said "All animals are equal." This sentence was the point of this speech, and made a summary of Major's view.

Tenor: The whole speech used presentation skills to inspire the audience. For example, there was one sentence I did not mention above. The character, Old Major, he said "Whatever goes upon two legs is an enemy. Whatever goes upon four legs, or has wings, is a friend." This statement drew a line between friend and enemy, in another word, animal and human. And he used "whatever" to enhance the sense of impact.

Mode: Because the genre of the passage is a speech, so it is more colloquial than written. Only through this method can it be

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more inspiring.

2.2 Compare two different versions of translation

The first target text is translated by Rong Rude.

"我只是再次提醒大家，永遠牢記你們肩負的責任，對待人類及其舉止行爲，必須持敵視態度……動物任何時候都不准住在房子裏，或睡在床上，或身穿衣服，或喝酒，或吸烟，或接觸錢幣，或參與買賣……不分强弱，無論賢愚，我們都是兄弟。凡動物都不可殺任何別的動物。"

The second version I would like to mention is Kui Jingqiu's translation.

"我只是重申一下，永遠記住你們的責任是與人類及其習慣勢不兩立……是動物就决不住在房屋裏，决不睡在床上，决不穿衣、喝酒、抽烟，决不接觸鈔票，從事交易……不論是瘦弱的還是强壯的；不論是聰明的還是遲鈍的，我們都是兄弟。任何動物都不得傷害其他動物。"

The differences between these two translation versions are not that distinct. However, there are still many points that worth analyzing.

With regard to field, both translation versions reflect the characteristics of speech. They are very provocative. In the field, two translations are not very different.

While in consideration of tenor, I think Rong Rude's translation is better. When a person makes speech, the relationship between the speaker and listeners is communicating to each other. And how the speaker affects listeners is also important. The speaker's language shows his character and educational level. There is a sentence in the source text, "Weak or strong, clever or simple…" Rong Rude's version "不分强弱，無論賢愚"is more like a leader's expression. It shows readers a person who has strong abilities of leading and calling. While Kui Jingqiu's translation is more like a normal person than a leader.

Mode is about what character language plays in communication. I want to bring up this sentence "No animal must ever live in a house, or sleep in a bed, or wear clothes, or drink alcohol, or smoke tobacco, or touch money, or engage in trade." Comparing these two different translation versions, we can obviously find that Kui Jingqiu used more negative words. The word "**絕不**" is added into every little sentences to enhance the sense of impact. This translation emphasized Major's strong requirements for antagonizing human. In this way, not only the listeners in the article, but the readers as us will also receive the infection and shock.

Besides, I want to add a little more. In the last sentence, Rong Rude translated the word "kill" as "**殺**", while Kui Jingqiu translated it as "**傷害**". This is just the difference in choosing words. The intention of "kill" in Chinese is "**殺**", but in this discourse, "**傷害**" is more suitable. What Old Major tried to express is that animal should not hurt each other rather than kill someone. So I think Kui Jingqiu's translation is more appropriate.

However, in my opinion, there is insufficient in both versions. For instance, the source text "remember always your duty of enmity towards Man and all his ways." The first target text translate it into "永遠牢記你們肩負的責任，對待人類及其舉止行爲，必須持敵視態度。" I think it is too long and a little long-winded. Maybe it's more formal. As the beginning of the paragraph, It should be easy to understand and go straight to the point. In this regard, the second translation is better, especially the word "**勢不兩立**". Both versions translate "duty" into "**責任**". Personally, even though I prefer the second version, I still think there are some problems in cohesion. We should have translated it more colloquial. So here is my suggestion, it can be translated as "**記住你們一定要和人類及其習慣勢不兩立**". As far as I concerned, this is more like a speech. It's simple but still contagious. Maybe my opinion is too immature to compare with other translation versions, but I still want to show my own view of register analysis theory and use my translation strategies to translate.

3. Conclusion

As a translator, he should understand the source text completely and then use his own strategies to translate appropriately. And different text types need different translation strategies, what translator need to do is to choose. Register analysis is a method to analyze not only source text, but also target texts. Besides, this theory gives writer and translator a reference to improve their abilities of writing and translating. By analyzing two different translation versions of <Animal Farm>, we can find that they both have advantages and disadvantages. Translators generally give priority to consider the field, and most of them can express the source text accurately. They know what strategies could be used to translate different kind of text types, such as fiction, advertisement, essay, etc. Then they consider how to make the idea of writers more clearly to the target readers. It helps us to jump out of the outdated concepts by using register analysis theories to analyze source text and target texts. Through this method, we consider the discourse as a indivisible unity of the whole and make ourselves one step closer to the origin text. However, if we try to analyze a text perfectly, we should use more strategies rather than register analysis only.

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Textual Research on the Real Author of *Man Jiang Hong*

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Abstract: The real author of *Man Jiang Hong* has been in scholarly dispute since Yu Jiaxi first challenged in 1930s. The purpose of this paper is to prove the real author was Yue Fei, and explain questions about literature and bibliography. By text interpretation and literary analysis, the writer shows that *Man Jiang Hong* reflected Yue Fei's experience and patriotism. It was also coincident with Yue Fei's other works both in content and style. *Man Jiang Hong* was not recorded in *Jin Tuo Cui Bian* or other books in the Southern Song Dynasty, Jin Dynasty or Yuan Dynasty. Because it might be a taboo for political and ethnic reasons and it was not allowed spread openly in those dynasties. However, it was handed down among people and reappeared after Tumu Crisis in the Mid-Ming Dynasty.

Key words: *Man Jiang Hong*; the real author; Yue Fei; explanation for literature and bibliography

Introduction

Man Jiang Hong is one of the most famous prose poems (Song-Ci) in ancient Chinese literature. However, the author of *Man Jiang Hong* has been a controversial topic so far. Chinese people had always believed that the author was Yue Fei, the famous patriotic general in the Southern Song Dynasty (1127-1279). However, Yu Jiaxi first challenged the author of *Man Jiang Hong* in his *Textual Research on the Catalogue of Imperial Collection of Four* in the 1930s. He thought that as the most representative composition of Yue Fei, *Man Jiang Hong* wasn't collected in *Jin Tuo Cui Bian*, or recorded in any other books in the Southern Song Dynasty or Yuan Dynasty (1206-1368). It was really questionable that the prose poem *Man Jiang Hong* under the name Yue Fei appeared suddenly in the Ming Dynasty (1368-1644). From then on, it caused a great controversy in the academic circle.

Xia Chengtao put forward another important doubtful point that the Helan Mountains in this poem was the place where Yue Fei had never arrived during the war resisting against the Jin Dynasty (1115-1234). So it could not be written by Yue Fei. The author of *Man Jiang Hong* might be Wang Yue or other generals with higher literature accomplishment in the Ming Dynasty. Because they once fought against Tartar around the Helan Mountains. Hui Kangyou thought the author was Yu Qian, another general in the Ming Dynasty. But Deng Guangming still believed that the author was Yue Fei. Because *Man Jiang Hong* has many similarities with Yue Fei's other compositions. And it might be missed by Yue Ke when he compiled *Jin Tuo Cui Bian*.

I think the most important question is why there was no record of *Man Jiang Hong* in the Southern Song Dynasty, Jin Dynasty or Yuan Dynasty. If the real author were Yue Fei, why there was no record until in the Ming Dynasty? If not Yue Fei, who was the real author? To solve these questions, this paper will focus on the text interpretation and literature analysis. There are three major sections as fallows. Section one reviews and analyzes questionable points about the viewpoint that the author was Yue Fei. Section two proves that the real author was Yue Fei, including the evidence against some general in the Ming Dynasty and evidence for Yue Fei. Section three shows explanation for literature and bibliography, including the reason why there was no record in *Jin Tuo Cui Bian* or any other books in the Southern Song Dynasty, Jin Dynasty or Yuan Dynasty, and the reason why it appeared in the Ming Dynasty.

1. Questionable Points that the author was Yue Fei

Jin Tuo Cui Bian is the compilation of Yue Fei's biographical information, report paper to the emperor, literary compositions and so on, collected and arranged by Yue Lin, Yue Fei's son, and Yue Ke, Yue Fei's grandson, to vindicate and honor Yue Fei, a patriotic general wrongly accused and executed. However, as the most representative composition of Yue Fei, *Man Jiang Hong* wasn't collected in this book. As Yue Ke said in the preface of *Collection of King E* (Yue Fei's posthumous title), he travelled from place to place and interviewed insiders, to find and collect information about his late-grandfather, including official records, stories among the people and manuscripts scattered around the country. Day after day, he recorded almost every word related to Yue Fei and finally finished the compilation of *Jin Tuo Cui Bian*. So it is unlikely that Yue Ke missed *Man Jiang Hong*, the most representative work of Yue Fei. That *Man Jiang Hong* was written by Yue Fei is indeed doubtful.

Moreover, there was no record about *Man Jiang Hong* in the Southern Song Dynasty, Jin Dynasty *or* Yuan Dynasty — official

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and personal bibliographies didn't record it; Scholars and poets didn't quote or mention it. The only marks found recent years have been proved to be false and unauthentic, including poetic criticism collection *Gu Jin Shi Hua*, note novel *Song Bai Lei Chao*, Yuan poetic drama *Anti-Jin story of Yue Fei*.

Until the middle of the Ming Dynasty, the prose poem *Man Jiang Hong* under the name Yue Fei appeared. At first, Yuan Chun arranged a collection called *Records on Loyalty*. He collected major works of Yue Fei and other people who commemorated or extolled him after Yue Fei Temple completed as a memorial in Tangyin, Henan Province, in 1451, the 2nd year of Jingtai period under the reign of Emperor Daizong in the Ming Dynasty. And *Man Jiang Hong* was collected in this book by Yuan Chun. Then it was inscribed on the stone tablet in this temple, in 1458, the 2nd year of Tianshun period under the reign of Emperor Yingzong. After that *Man Jiang Hong* was inscribed on the stone tablet in another Yue Fei Temple in Hangzhou, Zhejiang Province where Yue Fei was buried in 1498, the 11th year of Hongzhi period under the reign of Emperor Xiaozong and collected in *Works Left of Yue Fei* by Xu Jie in 1536, the 15th year of Jiajing period under the reign of Emperor Shizong. Without any record before, *Man Jiang Hong* appeared suddenly in the Mid-Ming Dynasty. It was under the name of Yue Fei and well known by people since then. So it is necessary to challenge the author of *Man Jiang Hong* according to the literature documentation.

2. Discussion on the Real Author of *Man Jiang Hong*

2.1 Evidence against that the author was someone in the Ming Dynasty

Since *Man Jiang Hong* appeared in the Ming Dynasty, and it might not be written by Yue Fei, could the true author be someone in the Ming Dynasty? There are mainly two viewpoints in the academic circle: Wang Yue and Yu Qian.

First, the author couldn't be Wang Yue. There are sentences in *Man Jiang Hong* as follows: "The Jingkang national insult, Is yet to be avenged; Your servants shame, When will it be erased?" These sentences referred to a famous history event called Jingkang Incident. During the Song Dynasty, there were also three main independent kingdoms established by nomads in the northern China, including the Liao Dynasty (907-1125) in the north, the Western Xia regime (1038-1227) in the northwest, and the Jin Dynasty in the northeast. Those three kingdoms often intruded into the border areas. The Jin Dynasty was extremely ambitious. After conquered Liao, Jin invaders broke through the capital Bianjing (Kaifeng, in Henan Province) and captured Emperor Qinzong and his father Huizong in 1127, the last year of Jingkang period under the reign of Emperor Qinzong. As a result, the Northern Song Dynasty perished. Then Emperor Gaozong, Emperor Qinzong's brother, rebuilt a new empire in southern China with its capital in Lin'an (Hangzhou, in Zhejiang Province).

In the Ming Dynasty, there was only one event similar to Jingkang Incident, that is, Tumu Crisis, happened in 1449, the 14th year of Zhengtong period under the reign of Emperor Yingzong. In July, Oirat attacked Datong (in Shanxi Provence). So Emperor Yingzong led his troops and went on the expedition personally. One month later, Ming troops suffered a crushing defeat in Tumupu — the emperor was captured. Two hundred thousand soldiers and ministers were killed. And then the capital Beijing was also besieged. However, Wang Yue was a general in Chenghua, Hongzhi period under the reign of Emperor Xianzong and Emperor Xiaozong, more than a decade after Tumu Crisis. Consequently, Wang Yue couldn't use such an allusion to express his indignation for the fall of the motherland.

Second, the author couldn't be Yu Qian. Yu Qian indeed experienced Tumu Crisis. However, when the capital Beijing was besieged by Oirat invaders, Yu Qian organized soldiers and civilians in Beijing rapidly and beat Oirat troops eventually. And one year later, Oirat released Emperor Yingzong. That is to say, for Yu Qian, he had the capacity to fight against the enemy and finally he succeeded. Therefore, he needn't express such grief and regret in the poem. On the other hand, it was Emperor Yingzong who went on the expedition personally to fight against Oirat. Although he was defeated and captured, he was different from Emperor Qinzong and his father, who were captured because the enemy broke through the capital and destroyed their empire. Tumupu was only a border city and the enemy who besieged the capital was also beaten back rapidly by Yu Qian. Tumu Crisis was a crisis while Jingkang Incident was a great incident which resulted in the fall of the Northern Song Dynasty. Consequently, people in the Ming Dynasty didn't have the same shame and indignation like people in the Song Dynasty who suffered national subjugation. They needn't use such a serious allusion or express such hatred for invaders. It was unlikely that *Man Jiang Hong* was written by someone in the Ming Dynasty.

2.2 Evidence for that the author was Yue Fei

Some scholars thought that the author of *Man Jiang Hong* was not Yue Fei but other generals with higher literature accomplishment like Wang Yue. However, in *Jin Tuo Cui Bian*, there are ten volumes of compositions called *Collection of King E*. Most of these compositions were written by Yue Fei himself. So he was competent enough to write such a prose poem.

Second, *Man Jiang Hong* expresses the heroism, patriotism and allegiance of the author. By text interpretation and historical materials analysis, *Man Jiang Hong* reflected Yue Fei's experience, thoughts and feelings, and historical background in the Jingkang Incident. Let's analyze the original text:

To the tune of "The Whole River Red"
Rage bristling under the cap,
I lean against the railing;
The rushing rain has ceased.
Lifting my eyes,
Towards the sky I let out a battle cry,

My blood is boiling.
Thirty years: rank and honor, just so much dust,
Eight hundred leagues: travelling with the moon and clouds.
Do not let it slip away;
When a young man's head turns grey,
Regret will be too late!

The Jingkang national insult,
Is yet to be avenged.
Your servants' shame,
When will it be erased?
Let us ride the long chariots,
To crush the Helan Mountains.
Glorious quest: to feast on the flesh of the Hu invaders,
We laugh and chat and quench our thirst with Huns blood.
Let us start;
To take back our rivers and mountains,
And report to the Heavenly Palace.

In the first six sentences in the opening part, the author was so indignant that his hair bristled under the cap. There were two reasons why the author could hardly contain his indignation in the following. In the first half of this prose poem, the author said that he went on expeditions day and night, but all the fame and honors would turn into dust if he couldn't achieve ultimate success. It would be too late for regrets when he grew old. The "ultimate success" means beating back the Jin invaders and recovering the lost territories. So the first reason for his indignation was that he was anxious to defeat the invaders and make contributions but he hadn't achieved his goals.

The second reason came from the enemy as was shown in the second half. The author obviously outpours his deep resentment to invaders. During the Jingkang Incident, Jin invaders broke through the capital Bianjing and captured Emperor Qinzong and his father Huizong, resulting in the North Song Dynasty's ruin. Although Emperor Qinzong's brother, Emperor Gaozong rebuilt a new empire in southern China, most of the territories in the north was invaded by the Jin Dynasty and people suffered from massacre and slavery. It was grave sorrow and disaster for every patriot and survivor. Consequently, the author swore that he would feast on the flesh of the invaders and quench thirst with their blood, and recover the lost territories to serve his emperor. Eating flesh and drinking blood were of course exaggeration to extremely express his hatred for the invaders. One could hardly write such a piece of work without such experience like Yue Fei — national subjugation, long time combat with invaders, deep hatred of the enemy and strong eager to recover the lost territories. One could hardly express such militant spirit, patriotism and heroism that could move and inspire everyone reading it. In conclusion, the historical background in this prose poem was about the Jingkang Incident; the experience of expedition, heroism and patriotism, resentment and regret, and ambition of defeating enemy were all coincident with Yue Fei. It was possible that Yue Fei composed this *Man Jiang Hong* in the battle against Jin invaders.

Third, from the style of this poem, *Man Jiang Hong* had many similarities with Yue Fei's other works. Yue Fei's works were always filling with resentment of invaders, regrets for not recovering the lost territories, and allegiance to the emperor and empire. For example, *the Mountain Shrine League Record* collected in *Collection of King E* :

Since the Central Plains were trapped into chaos, foreign invaders started wars frequently. I have experienced more than 200 times of fighting since I joined into army from Hebei State. Although failed to march into the enemy's lair, I also washed national humiliation one of ten thousand. Recently, I defeated the invaders and recovered Jiankang (Nanjing, in Jiangsu Province). Unfortunately, I couldn't continue the counterattack. I had to now come back to let troops rest and recharge. Then I will motivate soldiers and expect to beat again. We will battle north across the desert and assault the court of the invaders. We will kill the enemy all and spatter their blood everywhere. And then we will meet the two emperors back to the palace and recover the lost territories. So the court will no longer worry about the invaders and the emperor will sleep peacefully. This is my wish all.

As is shown in this record article above, Yue Fei first stated his experience in the war fighting against Jin invaders, then expressed his eagerness to kill the invaders, recover the lost territories and rescue the two emperors captured. We can find that both the heroic style and structure of the article, and the emotions and ambition of the author are coincident with *Man Jiang Hong*. It may not be a coincidence.

Last but not least, Song-Ci (prose poem) was the most popular literary form in the Song Dynasty. Prose poem sprang up in the late Tang Dynasty. It was used to sing to music by singing girls at feasts in early stage. In the Song Dynasty, prose poem gradually became a literary form. Different from poem, prose poem usually expressed love in an amorous style. Until after the creation of Su Shi and Xin Qiji, prose poem was also used to express ideals of intellectuals and broke away from musical form like poetry. Prose poem was so popular in the Song Dynasty that it was also called Song-Ci, another peak of ancient Chinese literature compared favorably with the Tang Poetry. However, in the ensuing period of the Yuan, Ming and Qing Dynasties, prose poem was still regarded as an amorous literary style and lack of solemnity. Ancient Chinese intellectuals were so courtly and reserved that they seldom described and expressed love. Generally speaking, they expressed their kinds of emotions and ideals by poem while love and lovesickness for their lovers by prose poem. For this reason, Yue Fei was more likely to write a prose poem than someone in the Ming Dynasty, especially when he was meant to express such heroism, patriotism and loyalty.

As for the Helan Mountains, some scholars thought that Yue Fei couldn't arrive there during Jin-Song wars. They were the

boundary between the Ming Dynasty and Tartar, Oirat. There were often at wars around the Helan Mountains. So the author could be some general in the Ming Dynasty, for example, Wang Yue. In my opinion, the Helan Mountains and Huns in the following part of the original text could be seen as allusions — the Helan Mountains represented those mountain strongholds near the border, and Huns represented alien invaders. It was mainly because the war between the Han Dynasty and Huns was the first time the Han nationality defeated nomad's incursion, and the Helan Mountains was important stronghold in the northwest. So Yue Fei was also likely to write about the Helan Mountains as an allusion in his work, just to show his determination to beat invaders far away from his country.

To summarize Section two, first, *Man Jiang Hong* was unlikely to be written by someone in the Ming Dynasty, mainly because that people in the Ming Dynasty didn't suffer a national subjugate and they didn't have such shame and hatred like people in the Song Dynasty. It was illogical to refer to the Jingkang Incident. Second, Yue Fei was the most probable author of *Man Jiang Hong*. Though he was a general, he was also competent to write literary works. By analyzing the content of *Man Jiang Hong* and contrasting it with other compositions of Yue Fei, heroism and patriotism, hatred of the invaders and loyalty to the emperor, experience of combat, ambition to recover the lost territories, heroic style and structure of the composition, and historical background were all coincident with Yue Fei. In addition, Yue Fei was more likely to express heroism, patriotism and loyalty by a prose poem than someone in the Ming Dynasty.

3. Explanation for Literature and Bibliography

By analyzing the original text and historical materials, we can come to a conclusion that *Man Jiang Hong* reflected Yue Fei's experience and patriotism. It was also coincident with Yue Fei's other works both in content and style. There is a strong possibility that Yue Fei was the real author. But the main question is why there was no documentation of *Man Jiang Hong* in the Southern Song Dynasty, Jin Dynasty or Yuan Dynasty, especially it was not collected in *Jin Tuo Cui Bian*. Generally speaking, a composition or a book could be recorded more or less in later bibliographies or books. How to explain this question from literature and bibliography angle? And why it appeared frequently in the middle period of the Ming Dynasty?

First, why *Man Jiang Hong* was not collected in *Jin Tuo Cui Bian*? If the author were Yue Fei, it would be his most representative work, as has been analyzed in Section Two above. Yue Fei sometimes wrote on the way to the march, and therefore his son and grandson sought and collected his remaining works nationwide after he was executed by Qin Hui. But Yue Lin and Yue Ke failed to collect exhaustively. There were still some other works found afterwards. For example, *Inscription on the Wall of Xiao Temple in Qingni:*

The heroic spirits soar straight up into the sky,
To swear allegiance: avenge my emperors and wipe out insult,
Kill the enemies and welcome my emperors back,
Not for high position or large fortune.

This poem was written when Yue Fei suppressed a rebel in Jiangxi Province. However, it was not collected in *Jin Tuo Cui Bian*, but in *Bin Tui Lu*, a historical anecdotal note by Zhao Yushi in the Southern Song Dynasty. In this way, it was possible that *Man Jiang Hong* was left out like this poem by coincidence. From my point of view, it's a fact that Yue Ke didn't collect exhaustedly. But *Man Jiang Hong* was the unique and most representative one. So it was almost impossible to be left out.

Second，if not because of being left out, why *Man Jiang Hong* was not collected in *Jin Tuo Cui Bian*? And why it was not recorded in any other books in the Southern Song Dynasty or Yuan Dynasty? It was really strange that almost no record could be found in official or personal bibliographies, even no quotation or mention in other works or books in those times. I think it was mainly because of political reasons and ethnic problems.

As the representative of anti-Jin party, Yue Fei disputed with Emperor Gaozong and his Prime Minister Qin Hui, the representative of capitulationism clique. Yue Fei advocated fighting against the Jin invaders and rescuing Emperor Huizong and Qinzong while Gaozong and Qin Hui preferred to sue for peace. On the one hand, Gaozong became the new emperor only because his father and brother were captured by invaders. What if they returned back? Who was the true owner of the whole empire? On the other hand, anti-Jin party and capitulationism clique were opposite groups in the court. Qin Hui worried that their benefit and position would be threatened if anti-Jin party became more and more powerful. So even when the final victory was forthcoming, Gaozong delivered 12 Gold Boards (used for urgent command) in all to order Yue Fei to withdraw his army. Disappointed and helpless, Yue Fei came back Lin'an. Before long he was thrown into jail on a fabricated charge and executed. Twenty years later, Yue Fei was proved innocent and got posthumous titles afterward. Nevertheless, it was a truth that Yue Fei had conflict with the powers and he was murdered by them for their political interests and power. It was a taboo to criticize the emperor in ancient China. Instead, people only blamed Qin Hui for Yue Fei's death. While Yue Lin and Yue Ke vindicated and honored Yue Fei in *Jin Tuo Cui Bian*, they also had to avoid showing any disrespect for imperial power. *Man Jiang Hong* was Yue Fei's most representative work which reflected his hatred to the Jin invaders and determination to kill them and recover territories. Consequently, they might leave it out deliberately when compiling *Jin Tuo Cui Bian* for political reasons.

When in the Jin Dynasty and Yuan Dynasty, *Man Jiang Hong* might even become a taboo in society. During the reign of the northern nomad, they enslaved and discriminated against the Han

people. Mongolians even divided all the people into four classes — Mongolians was the highest while Han people from the Song Dynasty was the lowest. They hated those who had fight with them before. We have no direct evidence to prove that *Man Jiang Hong* was not allowed to be spread in the Jin and Yuan Dynasties. But in the Qing Dynasty, another empire established by northern nomad in Chinese history, when Emperor Qianlong organized scholars to compile *Complete Library in the Four Branches of Literature*, he ordered to destroy millions of books and archives that were bad for his rule, and tamper lots of words scornful, for instance, Hu (a disparaging term for the northern barbarian nomads). Works of those who were suspected of participating in anti-Qing activities, for instance, Qian Qianyi, were severely suppressed. In this way, we could conjecture that the Han literati's works had same suffering in the period of the Jin and Yuan Dynasties. Moreover, *Man Jiang Hong* not only expressed the author's determination to defeat invaders and recover the lost territories, but also used some aggressive and racism words like "to feast on the flesh of the Hu invaders" and "quench our thirst with Huns blood". Nomadic archons couldn't allow such a poem to be spread in their empires. Because of political reasons and ethnic problems, *Man Jiang Hong* was probably a taboo from the Southern Song Dynasty to Yuan Dynasty. Under pressure of rulers, people took care not to record or refer to it both in official and personal areas.

Third, now that *Man Jiang Hong* was likely to be suppressed in the Jin and Yuan Dynasties, why it reappeared considerably under the name Yue Fei in the Mid-Ming Dynasty? Although *Man Jiang Hong* was not recorded openly in the Jin and Yuan Dynasties, it was not lost. The story of Yue Fei, the patriotism and heroism of him and his most representative work *Man Jiang Hong* were circulated among the people all the time.

As has been shown in Section One, *Man Jiang Hong* was collected in *Records on Loyalty* by Yuan Chun in 1451. Then it was inscribed on the stone tablet in Yue Fei Temple in Tangyin in 1458 and another temple in Hangzhou in 1498. Then it was collected in *Works Left of Yue Fei* by Xu Jie in 1536. So *Man Jiang Hong*'s reappearance happened after Tumu Crisis, when Emperor Yingzong was captured by Oirat invaders in 1449 and the capital Beijing was also besieged. At that time, many ministers were so terrified that they suggested moving the capital to Nanjing. However, Yu Qian was firmly opposed to migrating southward like the Southern Song Dynasty. He advocated Emperor Daizong, Emperor Yingzong's brother to ascent the throne. At the same time, he organized soldiers and civilians to defend Beijing and Oirat troops were defeated eventually under his command. Tumu Crisis was regarded as a turning point in military situation in the Ming Dynasty. It was the first time Ming people faced such a crisis. After that, in the middle and late Ming Dynasty, there were menaces from all directions — at first Mongolia intruded from time to time in the north, then Japanese pirates infested in southeast coastal areas, then Jurchen rose unexpectedly in the northeast and finally destroyed the Ming Dynasty. That the Ming Dynasty consistently extended and reinforced the Great Wall after the Tumu Crisis and Qi Jiguang was the most famous general of great honor in the Jiajing period were also examples. Under such circumstances, both rulers and common people were badly in need of courageous and competent generals like Yue Fei. People preached patriotism and heroism in that time. As a result, the court again and again granted titles for Yue Fei. And there were a large amount of literary works honored Yue Fei, for example, *Tumb of King Yue* by Gao Qi, *Record of Yue Fei's Allegiance* by Xiong Damu. *Man Jiang Hong* was a composition to express the determination to defeat enemies and defend the country. It could be easily to inspire people's patriotism and fighting spirit. So it might be wide spread in such circumstance.

Conclusion

The real author of *Man Jiang Hong* was Yue Fei, the famous patriotic general in the Southern Song Dynasty. Although it was not recorded in *Jin Tuo Cui Bian* or any other books in the Southern Song Dynasty, Jin Dynasty or Yuan Dynasty, the determination to defeat invaders and recover territories it expressed were coincident with Yue Fei. The historical background was also related to Jingkang Incident. Heroic style, content and structure had similarities with Yue Fei's other works. *Man Jiang Hong* might be a taboo for political and ethnic reasons so that it was not allowed to be spread openly in those dynasties. However, after Tumu Crisis in the middle Ming Dynasty, people called for courageous and competent generals because of constant incursions from alien invaders. So anti-Jin stories of Yue Fei were preached and Yue Fei was highly evaluated. *Man Jiang Hong* reappeared and was wide spread among the people in such circumstance.

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How Chinese Primary School Students Learn Mathematics: A Case Study of Beijing Chaoyang Experiment Primary School

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Abstract: The international comparative studies relating to students' achievements in mathematics have found that students from China consistently outperform their Western counterparts. This paper is a part of a series of four reports, which trace the origin of mathematics achievement from practice of mathematics education in Chinese primary schools by taking Beijing Chaoyang Experimental Primary School as a case to explore the factors affecting students' mathematics performance. The case study investigated the status quo and characteristics of Chinese primary school mathematics education from the aspects of Chinese mathematics standards and curriculum, primary school students' mathematics learning, teachers' teaching characteristics, and the school's teaching quality assurance practices. The study reported in this paper investigated how primary school students learn mathematics which provides a rich descriptions about Chinese students' learning activities including classroom learning, doing exercises and guidance relating to students' mathematics learning.

Key words: Mathematics learning, Beijing Chaoyang Experimental Primary School, case study, Chinese students

Introduction

It is widely known that Chinese children's mathematics learning activities are rich and varied. At Beijing Chaoyang Experimental Primary School, teachers believe that the mastery of mathematics knowledge is not a one-off process. It requires active participation in the learning process in the classroom. It is completed in a series of activities such as observation, operation, analysis, reasoning, reflection, communication and timely exercises to consolidate the knowledge. So how do children learn mathematics and how to let children learn mathematics has always been research questions that mathematics teachers are trying to answer. This report uses Beijing Chaoyang Experimental Primary School as a case to explore how Chinese primary school students learn mathematics through classroom learning, doing exercises and learning guidance.

1. Classroom learning

At Beijing Chaoyang Experimental Primary School, students are willing to actively participate in mathematics learning in a harmonious classroom atmosphere. Teachers report that one of the important signs of mathematics classes to make students become the main body of learning is that they actively participate in various mathematics teaching activities. Students prefer to be proactive in a pleasant and harmonious environment. One of the main purposes of the mathematics activities is to let the students experience the process of inquiry, the process of thinking, the process of abstraction, the process of prediction, the process of reasoning and the process of reflection, and acquire rich procedural knowledge, which will eventually form applying the consciousness of mathematics.

1.1 Children like to learn mathematics through activities

In mathematics classes at Chaoyang Experimental Primary School, students prefer to actively participate in mathematics learning activities, and practice and feel mathematics through rich and varied mathematical activities to master mathematics knowledge and feel the joy of mathematics learning.

For example, when students were studying the second grade book "The Understanding of Meter", the mathematics teacher Ms Shi created two mathematics activities, and the students' enthusiasm for learning was very high.

Activity 1: The magical use of small paper strips

The teacher first created a mathematical activity of "measuring the length of the blackboard with a unit of length of 1 cm" in order to increase the chances of student experience. Use a 1 cm wide strip of paper as a tool, and let the students put a small piece of paper on the podium in turn, and affix the number. When the number is 35, only 35 cm is measured. At this point, the teacher asked the question: "How do you feel about measuring here?" The student said: "It's too much trouble, how long does it take! The unit of centimeters is too small, the blackboard is too long, and the unit of centimeters is not suitable. ". At this point, the teacher asked: "What is the best way to

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measure?" The student proposed to take the meter. After the measuring, the teacher continued to ask: "Why is it faster to use the meter?" The students naturally contacted the rate of meter and centimeter for analysis, because there are 100 centimeter in 1 meter, and the meter is used once. Through in-depth thinking, the students not only understand the conversion rate between meters and centimeters, but also the different usages of meters and centimeters, and deepen their understanding in the experience activities.

Activity 2: Little Surveyor

The teacher arranges tasks of measuring, which require: measuring the length of the classroom, measuring the height and waist circumference of a classmate, and measuring the length of the lamp.

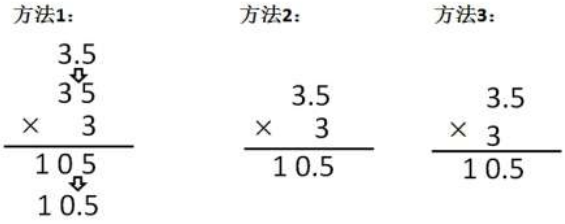
In the measuring activities, students actively find ways to solve problems. What if the classroom is too long and the ruler is too short? Students need to use the cooperation relay to completed the measurement. The students need to think that the ruler is straight and the waist is round. What should I do? With the help of a tape measure and a string, which can change the curve to straight. When measure the lamp, students need thank "What should I do if the lamp is too high?" One student stood at the end of the lamp, and the other stood at the other end, turning the problem of measuring the lamp into a problem of the distance between the two students.

The learning activities of "the magical use of small paper strips" and "small surveyors" subtly let students feel the relationship between the length unites of meters and centimeter, and more fully let students feel the joy of solving problems in activities. It is recognized the importance of choosing the right unit of measurement to further develop the student's sense of measurement. This kind of mathematics learning seems to increase the learning content, but in fact, it leaves students with a wealth of activity experience.

1.2 Children like to learn mathematics in seminars and communications

At Chaoyang Experimental Primary School, the mathematics classroom is for every student. Although each unit has new knowledge and new tasks, the students are not a blank piece of paper, and the knowledge is closely related. When students explore new knowledge, they have a large amount of knowledge in their minds. They will mobilize their knowledge reserves, conduct screening and application, and then explore and try to solve new problems on their own. After trying to solve the problems, students need to discuss and exchange ideas with their classmates, to reach a consensus with the classmates in terms of how to do better, what is the reason for doing this? Children like to learn mathematics in the relaxed atmosphere of discussion and communication.

For example, when learning the content of the fifth grade book "Decimal by integer", the students are first guided to explore independently and it is found that students have the following ideas.



The teacher then organized a student discussion. The teacher said that the answer to all three practices is correct with the answer 10.5. "Let's take a look at the differences between these ideas. Who used the first method to solve it? (3 students). Who uses the second method? (Most classmates) The third one? (1 classmate)".

Teacher: Look at Method 1, can you understand the ideas of this classmate? What do you think of this classmate's thinking?

Student 1: This classmate converts the decimal multiplication 3.5×3 into an integer multiplication of 35×3, and then uses the variation law of the product to get the original product.

Student 2: I think this classmate's thinking is very clear, let us know at a glance.

Student 3: He also wrote his own thinking process and I feel very good.

Teacher: Since this kind of thinking is good, why do you write this way? (Show: Method 2) What do you think?

Student 3: We are actually the same as this classmate's thinking, but we just put the process of thinking in my heart.

Student 4: I think it would be more clear to write like the first classmate, but if the number is bigger, it would be more troublesome. You can think about the process in your mind. Mathematical learning is "simplification", which is much simpler.

Teacher: The students are very good. Let's take a look at Method 3. Do you know what this classmate thinks?

Student 5: This classmate's algorithm is the same as ours, but the writing method is different. He uses: the same digit alignment, the same as the decimal addition and subtraction we used to learn, and we use the multiplication alignment method: the end is aligned.

Student 6: I think it should be aligned at the end, first do not look at the decimal point, according to integer multiplication, otherwise it is prone to the problem of alignment errors.

Teacher: Is it alright the align the decimal point?

Student 7: I think the decimal point alignment is not very good, because we used to learn "3+3.5", align the decimal points, that is, the same number of digits, so that it is easy to combine the two parts. But 3.5 × 3 means 3 times 3.5, which means the

meaning 3 3.5, so the decimal point cannot be aligned. Be sure to align at the end.

Teacher: It's really good to say that there is a positive transfer of knowledge and a negative transfer. Here is a negative transfer. Therefore, we have compared the resources of this classmate and deepened the impression. Thanks to this classmate for providing us with more room for thinking. We should pay attention to the decimal multiplication method in the future to calculate the vertical method we use Method Two.

In fact, at Chaoyang Experimental Primary School teachers are the organizers in the learning process. Students are the subjects of learning. The teacher encourages students to explore independently, organize resources, guide students to analyze their own learning resources, and explore new knowledge in the seminar. Such mathematics classrooms are more dynamic. At the same time, students cultivate analytical reasoning ability, listening ability, and communication ability in the process of analysis and communication. The mathematics learning of the students is such that under the guidance of the teacher, the daily love of mathematics is increased a little bit, and then a little bit is added, eventually falling in love with mathematics

1.3 Children like to learn mathematics in asking their own questions

At Chaoyang Experimental Primary School, in the past, teachers have asked students to answer questions. But this learning styles has been changed. Currently children hope that teachers will give them more time and space to think and actively learn. In the classroom, the teacher will give the children a chance to ask questions, and the children's thinking will be more active.

For example, when studying the content of second grade "Awareness of Right Angles", the teacher added such a teaching link to allow students to find a right angle in their lives. After finding the right angle, ask the students: "When you see so many right angles, what questions do you have to ask?" The students immediately found the problem with the eyes that were good at discovering: "Why do so many objects in life have right angles on the surface?" The question was once again thrown to the students: "This question is very well asked. But this question is not easy to answer directly. Can we reverse it?" Then the students are boldly assumed that if there is no corner on the ceiling, what will happen? What if our table is a triangle? If the ceiling is round, isn't it going to leak a lot of big holes? If the table is a triangle, then the surface we write will become smaller and inconvenient. After such a series of independent questions, the students further realized the benefits of rectangular angles and square corners. Through this teaching activity, students not only improve their ability to discover, ask, and solve problems. Moreover, the students can also understand that when a question is not answered directly, you can answer it from the opposite side. This is the penetration of the "reproof law".

Taking another example, when studying the "solving equations" in the fifth grade, when students solve the simple equation of x-3=9, some students think of the method of x-3+3=9+3. The authors went to the front as a small teacher and accepted questions from the students. The teacher said: "When you see the practice of these students, what questions do you have to ask them?" The first classmate asked: "Why is the +3 on both sides of the equation at the same time?" The emphasis is on the problem of "adding 3 at the same time." The student's answer directly points to the nature of the equation: "According to the nature of the equation, the equation is still the same when it is added the same number to the left and right sides of the equation, and the equation is still true." The second classmate asked: "How do you think of adding 3 at the same time, why not add other number? What other numbers?" This question is also very good. Directly pointing to the essence of understanding the equation is to simplify the equation and find the unknown x. The student replied: "When you subtract 3 and plus 3, you offset it and find x. If you add another number, it will become more complicated."

It is very clear to analyze the problem through mutual questions between students. This kind of learning is also very popular among students. Students like this kind of teaching activity that combines behavior and thinking. In such activities, students are growing their understanding of mathematics , they learned to think about mathematics from a higher cognitive level.

1.4 Children like to learn mathematics in retrospective reflection

The new curriculum standard states that the student's learning activities are a process, not only the learning outcome is the course goal, but the learning process is also the course goal. Students form wisdom not only by mastering a wealth of knowledge, but also by the experience gained in practice. Therefore, when the content of learning in the classroom is inquiry-based learning, teachers add some links that allow students to reflect on the learning process, which is more conducive to students' mastery of learning methods.

For example, when learning the content of the third section of the second edition of the PEP version, the "cutting and cutting" section, the teacher presented a reflective question at the end of the class: Looking back at the process of solving the problem just now, how do the students solve this complex problem? Students can realize through retrospective reflection that when they encounter a very complicated problem, it can be difficult to make it easy. It is too difficult to cut four villains. Students need first cut a villain and then cut two villains. Finally cut out 4 villains. This simplifies complex problems. Through this kind of reflection, the students are no longer learning those knowledge, but the process of research, which is infiltrated with the research process of the mathematical thinking method of "making hard things simple".

At Chaoyang Experimental Primary School, students can not only reflect on the similarities, differences, and connections between knowledge in the classroom. They can also reflect on the learning methods and research processes to learn the way of thinking in mathematics. Understanding mathematics learning from multiple perspectives is very helpful for students to improve their mathematics literacy.

2. Doing exercises

Doing mathematical exercises is an important part of checking classroom learning and an extension of classroom teaching. Exercises are both a way for teachers to understand the situation of students and a way to train students' thinking and develop students' abilities. The exercises are divided into on-campus exercises and after-school exercises.

2.1 On-campus exercises

a. Exercises on math books

In each of students' mathematics textbooks, there is a corresponding "Doing Exercises" after the example, as a test in the classroom. After a few examples, there are exercises for several examples to consolidate several new knowledge and communicate the link between new knowledge. The assignments in the exercises are generally completed in the practice session.

For example: Decimals multiplication example 1, example 2 is followed by Doing Exercises and Exercises One.

b.Homework in the book of Math Goals

The book of Math Goal is equivalent to the workbook, and the teacher asks the student to complete the exercises at the school in 10-15 minutes in the self-study class. At the end of each lesson, the math goal will be accompanied by a special exercise for this class. The purpose is to examine the knowledge of the students in this lesson, and let students to grasp the knowledge according to the completion situation.

c. Early morning self-study calculation exercises

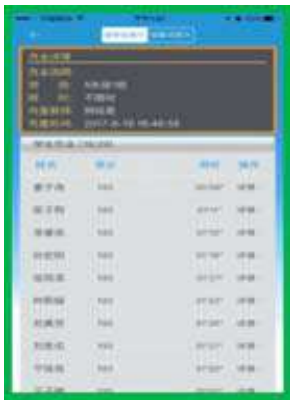
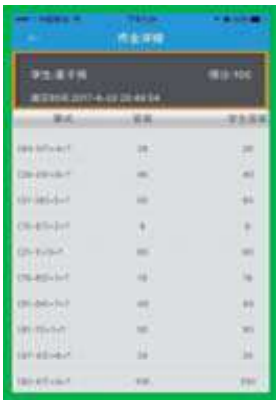
In the early morning reading time, the teacher at Chaoyang Experimental Primary School always takes 10 minutes to practice the basic 5-10 items of oral calculations and 2-3 items of calculations. Because oral calculations and calculations are the basic skills of mathematics, and the formation of skills requires continuous consolidation exercises. The students are require to practise 10 minutes a day. The teacher give the students questions based on the calculated test points one week in advance. After the students finish the work, the teacher will analyze, correct and follow the students according to the questions. Through long-term adherence to the continuous line, students' oral and computing levels are getting better and better.

2.2 After-school exercises

a. Oral calculation assistant

In addition to regular classroom exercises, there will be some after-school exercise. At the Chaoyang Experimental Primary School, the design of homework can be said to be comprehensive and novel. The general mathematics homework time is 10-20 minutes, mainly in the following types.

The oral calculation assistant is a mathematics learning assistant software developed by the Chaoyang Experimental Primary School. The teacher arranges homework 1-2 times a week, 2-5 minutes each time, and practice for the oral calculations after learning the content in classroom at the school. The teacher can check the oral calculation of each child at home. If there is an error in the process of doing the problem, the system will automatically generate similar questions for consolidation exercises, which will improve the students' oral calculation ability. Students can also choose to practice their own for their own oral calculations.

b. Problem analysis assistant

The problem analysis assistant is also a mathematics learning assistant software developed by the Chaoyang Experimental Primary School. The purpose of this software is to help students accumulate mathematical language and cultivate students' analytical ability. The problem-solving assistant has subtly extended the math class. Because the mathematics classroom teaching time is limited every day, it is impossible for every child to answer every math problem, but a lot of knowledge is needed to show the students' thinking process, which are placed in the exercises to be completed by students.

Perhaps one day's homework is an analysis of vertical questions. This vertical analysis process takes 1-2 minutes and the students can complete it on the mobile assistant. Students can learn from each other, listen to each other, don't say it, and learn from others. The teachers believe that language is the outer shell of thinking, and the process of externalizing the thinking process with language is the best way to cultivate the ability of mathematical expression. Many teachers from other schools come to Chaoyang Experimental Primary School to attend classes, and they will admire the students in the school who are particularly good at expressing and willing to express themselves. This is also the result of the school's teaching to help students to develop their express ability in class and after class.

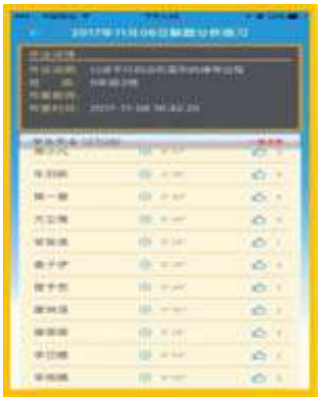
So what exactly does the student analyze in the problem-solving assistant? In fact, a lot of content is worth analyzing. Here is a example that give a brief introduction to the content of mathematics teaching in the fifth grade.

(a) The calculation unit of decimals multiplication and division allows students to communicate the idea of calculation.

(b) Simple equations allow students to analyze the process of quantitative relationships and column equations

(c) The process and idea of deriving the formula of polygonal area unit analysis.





2.3 Exercises of practical activities

At the Chaoyang Experimental Primary School, in the process of mathematics teaching, there are some operational knowledge or content that is combined with the actual life and the teachers also arrange exercises of practical activities for students.

For example, if students know the RMB in the first grade, the teacher can arrange mathematics experience activities for

students to shop with Mum and Dad. In the second grade the student has learned the time and the teacher allows students to design a schedule for the weekend. In the third grade, students learned the knowledge of measuring the length, and the teacher can arrange students to measure the distance between the school and the home by measuring the length of their steps. In the fourth grade, students learned the knowledge of the area and the teacher can arrange practical activities for students such as measure the size of their bedroom and living room. In the fifth grade after studying of tree planting content, the teacher allows students to collect models of tree planting problems in their lives, and photograph them with their cameras to share them with classmates. In the sixth-grade after learning percentage the teach allows students to find the percentages in their lives, to understand the role of percentages in life, and so on.

The practical activities are closely related to the real life, and the students are very happy to complete. Through such homework, students are also exposed to the close connection between mathematics and life.

2.4 Writing math weekly report

Writing math weekly report, a weekly math activity, is usually arranged on Friday at Chaoyang Experimental Primary School. Through writing the weekly report, on the one hand, students can summarize and sort out the knowledge of one week of study. They can also reflect on their own problems this week, and they can also think deeply about issues of particular interest to them.

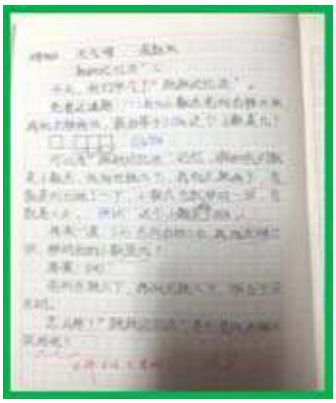
For example, after learning the “two-digit by two-digit multiplication” unit, the children reflected on the knowledge and thought deeply.

Student Ni: When we combed the two-digit multiply two-digit number today, we sorted out a "big god" which is “place value." It is said that place value is a “great god” because every knowledge point in this unit is centered around the place value.

Student Wang: Today, we have combed the two-digit multiply two-digit knowledge. More than ten pages of knowledge have become one page. It is really to change the book from thick to thin.

Another example: learning about the operation of 0, some students have compiled a small story, which means that the grasp of knowledge has taken it to the next level.

The students wrote: 0 has many houses in the mathematics kingdom, one of which is in the three-digit community, in the division building. 0 especially loves to take a nap, one day its friend said: "0, let's go to the top chair of this building and the ten chairs to go on a date?" 0 said: "Yes, but you have to meet two conditions." What conditions? 0 friend said: "First, I am not enough to divide, the second, the former must be removed." Its friends met the conditions of 0 to the top floor dating.



One of the purposes of mathematics education is to develop students' ability to write and communicate. Writing mathematical weekly report undoubtedly provides an opportunity for students to express mathematical ideas, methods, and emotions in a mathematical language or in their own language. And mathematics weekly reports have evolved into a means of self-reporting, evaluating one's abilities, or reflecting on one's own evaluation. It also helps teachers develop and evaluate students' ability to reflect on cognition.

3. Learning guidance

Because students' knowledge base and acceptance ability are different, different levels of students have different thinking characteristics and subjective knowledge in their learning process. Therefore, it is necessary to provide students with learning guidance for the degree of cognition of students' learning. Guidance of Students' learning generally includes class tutoring, after class counseling, and home coaching.

3.1 Class tutoring

The types of classroom teaching in mathematics at Chaoyang Experimental Primary School are divided into:

a. Inquiry class, namely: the exploration of new knowledge.

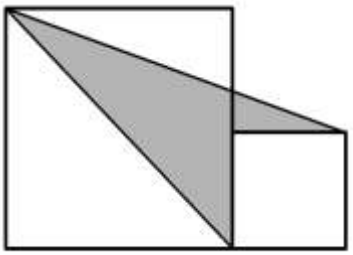
b. Practice classes, that is, the consolidation exercises for new knowledge, often include variant exercises of new knowledge, and contrast exercises between easy-to-mix and error-prone knowledge.

c. Review class, which is a course of combing and summarizing between unit of knowledge.

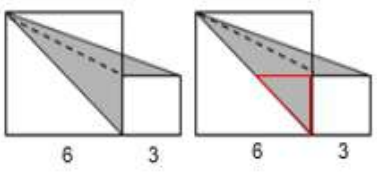
d. exercises class, a course to check the mastery of knowledge.

Classroom tutoring for students is generally more common in practice and exercises classes. For the common problem, the teacher will let the students improve their understanding in the comparison of various methods by means of letting students talk about the problem-solving ideas. After most of the students have mastered, the teacher finds the problems of individual students during the student's homework inspection process, and will go to the student side to provide targeted guidance for the student's cause of the error.

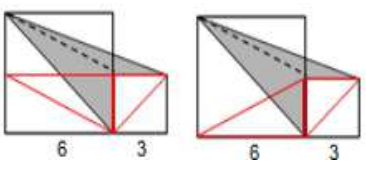
For example, after learning the triangle area in the fifth grade, the students have some difficulties in answering this question: as shown in the figure below, the square of the large square is 6 cm long and the side of the small square is 3 cm long, and the area of the shaded part in the figure is sought.



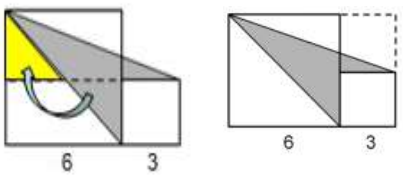
The teacher can use the method of class tutoring. First, guide the students to talk about how to think about this question. The teacher ask the student who knows the answer to talk about their ideas to the classmates. Then the teacher guides the students to sort out these methods and summarize the classification , and to transformed into ideas to solve this type of problem.



Idea 1: Segmentation



Idea 2: Conversion method



Idea 3: Large area - blank area

On the one hand, such classroom tutoring fosters students' self-confidence in learning, and also guides students' mathematical thinking methods.

解：
$$100-x=25$$
$$100-x+x=25+x$$
$$100=25+x$$
$$25+x=100$$
$$25+x-25=100-25$$
$$x=75$$

3.2 After-class counseling

When a student is sick or has a problem with a certain part of the knowledge, the teacher will also give after-class counseling to the individual student. The counseling is often one-on-one guidance, which can be completed by the time of the self-study class.

For example, in the fifth grade learning equation solving problem, most students mastered the method of solving equations using equations in the classroom. However, some students still confuse the method, and the teacher can find a better problem-solving strategy for the students of several problems and practice. This is individual counseling. For example: Solve the equation of 100-x=25. In the process of solving the equation, the teacher will use the dotted frame to frame the contents that he intends to remove, and use the arrow exchange method to transform and use the simple symbol to externalize the student's thinking. Later, these students quickly mastered the method.

3.3 Home coaching

If the student has problems in the homework, the student can also send the question to the teacher via WeChat, and the teacher will use WeChat to give one-on-one guidance to the students. Such guidance can solve the problem of the day and avoid the obstacles of learning new knowledge.

4. Student's daily mathematics study arrangement

In the Chaoyang Experimental Primary School, the time spent studying in the school is 5 days, 6 lessons per day, 30 lessons in total, and 5 lessons per week in mathematics. Below is the student's weekly schedule:

	语文	数学	语文	数学	语文
	数学	体育	数学	语文	数学综合
	神秘的热空气	电子梦工厂	理财能手	水墨童趣	德语
	神秘的热空气	电子梦工厂	理财能手	水墨童趣	英语
	体育走班	英语	品德与社会	体育	班队会
	语文	语文	英语	市专题	区专题
		歌舞剧初级	剪纸社团	唱游英语	

In addition to math classes, each day students use spare time to do some math exercises. Students arrive at the school early every morning. They do 5-10 oral calculations and 2 to 3 calculations in 10 minutes before class. They use 10 to 15 minutes at noon to complete the mathematics assignments of the day and consolidate what they have learned in class. After school, they take 10 to 20 minutes to complete math homework.

In summary, this paper tried to answer the question how students primary school learn mathematics by providing a rich descriptions about a case study on Beijing Chaoyang Experimental Primary School students' learning activities in terms of their classroom learning, doing exercises, classroom counseling, after class tutoring, home coaching and self-study.

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A Comparative Study on the Current Situation of Physical Education between China and Australia

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Abstract: Through the collection and sort of the related documentation of the current situation of physical education in China and Australia, it is found that the comparative study on the current situation of physical education between China and Australia is mainly focused on the comparative study on the curriculum objective, curriculum setting, syllabus and teachers. In order to find out the deficiency, this paper sorts out these studies comprehensively and provides some references for the development of physical education in China and Australia.

Key words: China, Australia physical education, comparison

Introduction

Australia is one of the world's sports power; its physical education started earlier and its development is mature, and it's got the government's great importance. Since the modern times, China's physical education has risen from the embryonic stage and exploratory stage to the maturity, but there are many problems. In the current comparative study of the current situation of physical education in China and Australia, the research on curriculum objective, curriculum setting, syllabus and teachers is mainly carried out.

1. A Comparative Study of Curriculum Objective

The curriculum objective is the intention and specific goal of the course itself, which specifies the degree that the students should achieve in the course of learning, and which is also the basis for determining the concrete content of teaching, setting up teaching goals and choosing teaching methods.

The regime system of the federal system of Australia has determined the regional difference and diversity of the curriculum objective setting. However, in school education, physical education is indispensable. As a whole, the teaching outline of physical education promulgated by many schools in many regions of Australia all set the "Health First" as the basic idea of the curriculum objective setting of physical education. This is the same as the guiding ideology "Health First" in the basic idea of *Curriculum Standard for Physical Education and Health* issued by China in 2011. From Comparison of Current Situation of Physical Education in Elementary and Secondary Schools in China and Australia written by Yan Cao, Xinmei Ma, it can be found that *Education Syllabus for Personal Development, Health and Physical Education* enacted by New South Wales in 1997 is the same as *Curriculum Standard for Physical Education and Health* in China in the basic idea "Health First". In addition, they are also the same in the terms of the aim of cultivating students, enhancing physical performance, teaching physical knowledge and sports skills, and emphasizing the equality of students in teaching. At the same time, the two countries have almost unanimously agreed to cultivate students' "life-long sports view" in the curriculum objective setting.

However, there are obvious differences in the curriculum objective setting of physical education for the two countries.

1.1 Difference in educational thoughts

Australia's educational ideas focus on emphasizing the health goals of the curriculum, and the goals are achieved through the joint efforts of students' individual body capabilities, social skills and technical skills, which not only need the improvement of physical skills, but also need the improvement of mental health and social skills with a certain overall development. While China's educational ideas focus on emphasizing the improvement of physical ability and exercise skills. After "new curriculum reform", the education of mental health was added, and the physical and mental health of the students was emphasized, but by contrast, it still has a single character, and there is a certain deficiency in execution capacity.

1.2 Difference in the evaluation system

In the physical education of Australia, emphasis is placed on cultivating students' interests in active participation in sports, encouraging students to actively participate in sports, and experiencing happy learning and happy improvement in the process of movement, and great importance is attached to

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the objectives of teaching process. China has classified physical education as a course based on physical exercises and physical education, focusing on teaching students' sports skills, taking exams according to the indicators of sports skills, and the cultivation of the sense of happiness and well-being of students' participation in sports is insufficient.

2. Comparative Study of Curriculum Setting

The physical education curriculum setting of Australia varies according to the curriculum standards of the states. According to *Overview and Consideration on Physical Education in China and Australia* written by Gang Zhang and Min Xu, the Physical Education curriculum of Australia is integrated into a comprehensive course, which is divided into optional and compulsory courses. Students must complete the study of compulsory courses in the prescribed time, while the optional courses are rich in contents and can be freely chosen by students. According to different grades, the number, time and project of courses are different. However, the frequency and project of these courses are related to the physical and mental development characteristics of all ages of the students, and are included in the students' national unified education examination. The aim is to train students' interest and ability in physical and mental health and participation in sports.

In the compulsory courses, Australia's physical education requires students to learn butterfly stroke, backstroke, breaststroke and freestyle at the primary school, and students should have swimming courses for more than 10 hours every semester. In addition, outdoor living skills are also classified as a kind of skill that students must master; students are trained in the outdoor training base in the field; the students' independence ability and the survival ability are exercised, and the self-challenge is strong. At the same time, basketball, tennis, cricket and football are also the main sporting events for promotion and study in school physical education.

In optional courses, in order to meet the needs of students' physical and mental development, schools offer various fashionable and new sports. With Queensland as an example, schools will arrange different sports events according to the seasons; for example, in the summer semester, schools will offer water polo, surfing, sailing, golf, basketball and other events, while in the other semesters, schools will offer badminton, track, cross-country race, football, gymnastics and other sports events to raise students' interests in participation in sports.

In China, the setting of physical education curriculum is usually based on fixed track, gymnastics, martial arts and ball events, assisted by eye exercises and simple physiological health knowledge.

In primary and elementary school stages, the main courses are compulsory courses; the track and field, gymnastics, martial arts and ball events are studied according to the syllabus. In the high school stage, the main courses are optional courses; the programs opened are relatively more, but most schools are still mainly focused on track and field, gymnastics, martial arts and ball events, and some schools with relatively better teaching conditions offer swimming, calisthenics and so on, but the opening events are still relatively single.

At present, the setting of physical education curriculum has formed a more fixed teaching content system. After "new curriculum reform", the teaching materials of physical education curriculum presented the trend of the progressive increase of selective teaching materials and the decrease of prescriptive teaching materials. However, the contents of physical education curriculum have not changed much; the fitness, time and entertainment of the curriculum setting are insufficient, and the space of development is relatively large.

3. A Contrastive Study of the Syllabus

Before the 1990s in Australia, the state education departments manage the teaching courses of their respective states, and formulate their respective syllabus and teaching process plan. But since the 1980s, experts and scholars have had more and more critical sounds for this "state outline". In their view, this "state outline" greatly affects the coordinated development of the national physical education curriculum and is not conducive to playing the initiative of school running. For example, students are more difficult to learn across state learning. As a result, Australia for the first time in 2010 issued a unified outline of some curriculum for primary and elementary schools of the whole country, and the outline of PE education curriculum was gradually perfected and unified.

Unlike Australia, China's physical education curriculum setting has long practiced a unified curriculum; the teaching contents, periods and teaching schedule are detailed in the syllabus. In 2001, before Curriculum Standard for Physical Education and Health was issued, the national unified syllabus made China with vast areas and great differences have great teaching constraints in the course of physical education. Some regions are unable to carry out the teaching according to the contents of the syllabus because of the lack of school-running level and teaching conditions, but they can not adapt to the local conditions and adopt more flexible teaching contents, with a lack of flexibility and great difficulty in teaching.

After Curriculum Standard for Physical Education and Health was issued, the physical education curriculum is repositioned, and the tertiary course management system of "School-Region-Country" is also adopted. That is, under the unified management of the country, it is necessary for the region to formulate the model meeting regional characteristic requests and not violating the unified standard of the country,

so as to coordinate the subject requirements of different regions, different schools and different teaching objects. In this way, many distinctive areas and schools can develop more physical education curriculum models suitable for themselves according to their own characteristics and regional advantages. Autonomy and enthusiasm in running schools of regions and schools can be improved. This concept has a certain degree of innovation and advancement.

4. A Contrastive Study of Teachers' Force

The PE teachers of Australia must receive higher education for 4 to 7 years, mainly graduating in the physical education major of the comprehensive universities. According to National Certification Standard of Australia Pre-service Teacher Education, PE teachers should at least obtain a bachelor's degree in education or teaching and require at least one year of teaching probation.

In Australian Teacher Report, the teachers in Australia who enter the primary school teacher system all gained the bachelor's degree in education or teaching; the teachers who enter the middle school system all gained the master's degree or double degrees.

Most of the PE teachers in China have graduated from physical education institutions or the physical education major in normal colleges and universities, and there are also a small number of comprehensive colleges and universities developing physical education majors. The National Ministry of Education has stipulated that PE teachers in high schools shall have a bachelor's degree in education or physical education; PE teachers in primary and elementary schools shall have a college degree in physical education.

According to the survey, the percentage of reaching the standard for PE teachers in China at present is 60.7% in primary and junior high school and 43.68% in high school; the level of reaching the standard is low. In addition, many schools in some regions at present lack PE teachers; for example, since 2013, the Beijing area has been aimed at the new graduates of Beijing area and new graduates of the key colleges to recruit the music, PE and art teachers; the number of recruitment is large, and the compilation and residence are solved for them. In some remote mountainous areas, other discipline teachers even act as PE teachers. The number and quality of PE teachers need to be improved.

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Exploration of Mixture Between Neural Network and Stock Market

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Abstract: these years the development of artificial intelligence is always highlight and moreover, the neural predictive network model has been used in many fields. There is an advantage of neural network that most of other models can't achieve is its quite high fitting precision so this dissertation discusses the possibility of predicting stock price, based on the neural network.

Key words: Neural Network; stock market; neuron

Introduction

Stock price prediction is to predict possibility and direction of the future stock price, which is based on data mining technology and other multifarious models. However, it is obvious that each model has pros and cons and generally, it hard to achieve high fitting precision like neural network. So purpose of dissertation is to elaborate the direction about how to build a neural network stock prediction model.

The design of this dissertation is as follows:

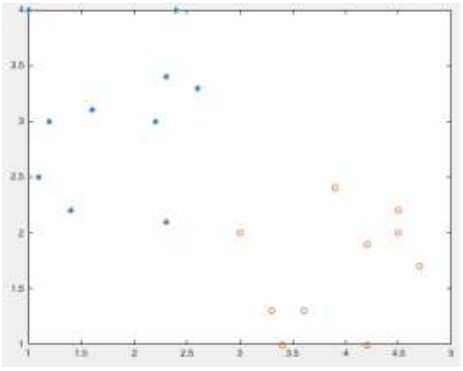
Chapter 2 introduces the function and component of neural network; Chapter 3 discusses all sorts of factors influencing stock market;

Chapter 4 shows the details of how to build a stock neural network model step by step; Chapter 5 summarize the whole dissertation.

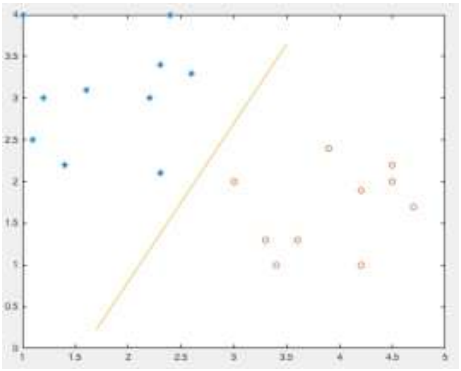
1. Summary of neural network

1.1 Function of neural network

The most fundamental function is pattern identity for neural network and, more understandable explanation, it is classification. Setting a simple example: given coordinates of some points each of which is either blue or orange, how do you judge a point color with certain coordinate?



a. input data



b. dealt by neural network

Diagram1 sketch map of neural network

The diagram(a) shows the position of given points and diagram(b) shows a yellow straight line divides all the points into two groups according to colors, which is a demarcation line. Of cause the answer is not the only one cause every time running neural network the results have slight change but it is normal phenomenon.

1.2 Neuron model and transfer function

1.2.1 Basic neuron model

Imaging the real neuron cells in biology, they are

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The project aims to study the Financial Accounting Soft Information and Capital Market: Based on the Perspective of Textual Analysis. The project is researched by the innovation team supported by a grant from the principal fund of Xiamen University.

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connecting with each other and transferring electronic signal. Neuron model is like them and connects with others neurons in the last layer and each connection is attached a weight. Generally, all the weights are random(how to initiate weights is a quite important topic since this could effect later training process and final performance of whole model). The weight could be negative or positive, quite small or big and of cause, zero. The data of neurons connecting to this neuron multiplied by weights and calculate the sum of the results.

1.2.2 Convolution neuron model

Just like basic neuron except convolution neuron only connect with part of neurons in the last layer. Rather than connecting certain neuron randomly, convolution neuron builds connecting with those neurons in a specific range. The purpose of convolution neuron is to preserve special information such as image date and voice data

1.3 The layer of neural network

1.3.1 The summary of layer

Neural network is built by layers. Generally, a complete neural consists of input layer, hidden layer and output layer and the hidden is a general name for the layers between input layer and output layer the number of which is one or more than one. And each layers is made of some neurons so the conception of layers connect with both neuron and neural network.

According to our previous description of the basic neuron model, we connect all the neurons above one neuron by the sum of the weights and add them to the activation function, which is what we call the transfer function. This is the number of neurons in this layer. Putting it into a mathematical formula is:

$$y = a\left(\sum w \cdot x + b\right)$$

X is the input, y is the output, w is the weight, b is the offset, and a ( ) is the transfer function.

1.3.2 Functions and examples of layers

The function of the layer is a kind of spatial transformation. Each layer of neurons is a transformation of the input space and then the output space. There are five kinds of space transformation: lifting dimensions; zoom in and out; rotation; translation; bending. Obviously, there are two collections in the world that cannot be separated by a single line. At this time, we need to introduce the concept of spatial transformation. For example:

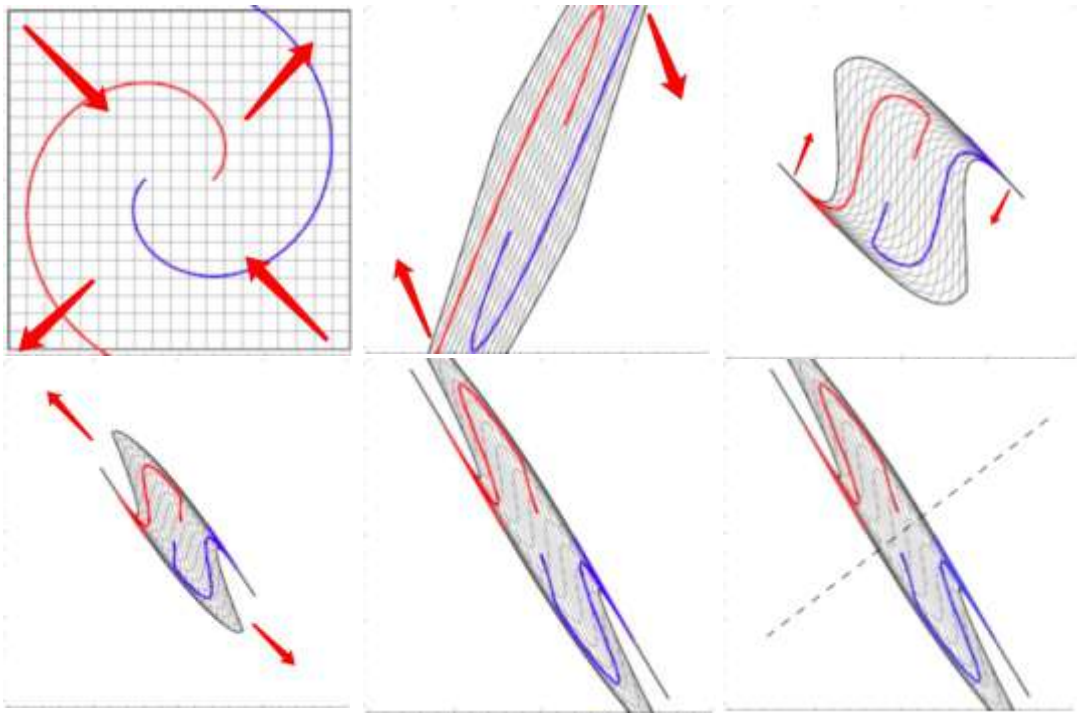

Diagram 2. Graphical representation of spatial transformation

So through the layer, we constitute a neural network, so the neural network can be applied to most non-linear data. Of course, it includes the data in the stock market. Its function is powerful so we maybe predict the chance of buying long and

short.

1.4 neural network training

from the Chapter 2.1, the function of neural network, we have already shown a simple example to illustrate the classification while a neuron is able to know which line could divide two set. Therefore we could use a Hebb algorithm. This algorithm finds a line randomly. Each sample data compares with this line and if line is wrong, then move the line a litte to that sample. As for it is right, the line gets no change. Generally, the process of training just likes a dancing of a line.

1.5 shortages of neural network

All kind of neural network(we always call them NN), no matter it is convoluted, recurrent or deep neural network, the most obvious disadvantage is local minimum. The original goal is to find the global minimum rather than local one. And the suggestions is to update study rate or optimize the original weight.

Besides, according to a deep neural network, the input set will lost its efficiency as a training signal during the transmission of layers. Until 2006, Hinton use the Pre-training against this effect and after this method, there are highway network and residual neural network which are able to have a better relief.

2. Overview of the Stock Market

2.1 Macro effects

(1) Economic Growth. Economic growth is an important indicator of the economic performance of a country or region. When the economy grows, stock prices tend to rise, and vice versa.

(2) Economic cycle. In recent years, both the stock market and economic development have a cyclical cycle. The large-scale decline in the stock market is closely related to the decline of the economy.

(3) Fiscal policy. On the one hand, it adjusts the tax rate to influence the company's profits and interest, which further influences dividends. On the other hand, for companies in different industries, changes in the industry's policies have a huge impact on their share prices.

(4) inflation. In the initial period of inflation, due to the increase in the amount of money, the stock price theoretically appears to grow like inflation; but in the later period, high commodity prices and rising corporate costs will have a greater negative impact on stocks.

2.2 Company operating conditions

(1) The company's profitability. The company's profitability can be said to be the most essential factor in the price of that stock. The stock price will often change before the company's profit changes. Investors determine their own supply and demand for a stock based on the judgment of the macroeconomic situation and the company's operating conditions. In practice, the company’s profitability has not changed, but only when there are some factors that may affect profitability and when it is known to investors, the stock price will fluctuate with changes in investor expectations. People say that the stock market is a barometer of economic development because stock price changes can reflect changes in the economy in advance. Usually changes in stock prices must precede changes in earnings, and the extent of stock price changes must be greater than the degree of changes in earnings.

(2) net asset value. The net asset value fundamentally reflects the true value of the stock. If the company's net asset value is high, the stock price will be higher accordingly. From a theoretical point of view. The net value per share should maintain a certain proportional relationship with the stock price. The reasonable valuation of stocks is based on the grasp and judgment of the company’s net assets.

(3) Capital operations and corporate governance events. The capital operation covers a wide range, including capital increase and reduction, reorganization, merger and reorganization, and introduction of strategic investors. In corporate governance, major strategic adjustments involving companies, such as production operations systems, financial systems, personnel systems, capital (equity) structures, etc., and the replacement of major business operators will indirectly affect the trend of stock prices.

2.3 Other influencing factors

(1) Because the regulatory system of the Chinese stock market is not perfect, the "inertial strategy" and "reversal strategy" applicable to the international financial market will appear to be Chinese. Wang Yonghong and Zhao Xuejun (2001) proved that China’s stock market presents a more short-term strategy model, and “inertial strategy” is not applicable. The reason for this was elaborated in Zhao Tao and Zheng Zuxuan (2002) on "Information Asymmetry and Institutional Manipulation - Game Analysis of China's Stock Market Institutions and Individuals".

(2) Judging from various technical indicators, past information has a certain significance for future stock prices, so past information should also be considered in the next model.

(3) For the same industry or related industry stocks, there is a certain relationship between them. So it can be used as one of the reference conditions.

3. Combination of neural network and stock market

In the neural network input layer, the most intuitive need to add macroeconomic indicators, inflation coefficient, corporate net asset value and the company's profitability indicators (in the company's panel can be found).

3.1 Economic Cycle Indicators

From the rise and fall of stocks, find the secondary economic cycles of individual stocks and then determine the main economic cycle from the trend of changes in the composite index. Then use different weighted trigonometric functions to simulate such periodic changes.

3.2 Fiscal Policy Indicators.

This indicator is divided into two variables, one is the time series of the country-to-business tax rate, and the plan is to use the correlation of other stocks of the same industry or related industries and the change trend of the research stock to replace the policy-related impact indicator. .

3.3 Past information.

Different lag orders were used to test the correlation with the original sequence, and the optimal lag order was chosen to form a new independent variable.

3.4 The influence of the reversal strategy is not planned to be reflected in the model.

Because the reversal strategy is used to determine whether to buy or sell, and our goal is to predict stock prices and trends, there is no inevitable link.

4. Concluding remarks

The application of neural networks is constantly expanding into practical fields. In the past, the prediction of the price of stocks was often based on human psychological activities and various financial theories. However, in a market where the financial system is not so mature and stable, it is easy to appear contrary to theories. Therefore, using neural networks with high tolerance and robustness to accommodate as much data as possible is a bold attempt to predict future prices.

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Intellectual Capital Transformation of Fusion Depth of Research Reviewed

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Abstract: At present, we have stepped into a knowledge for factors of production, the person's intelligence creation as the core, to possess, intellectual resources configuration, the production, distribution, consumption is the main economic activity in the era of knowledge economy. In this day and age, knowledge, ability and so on intellectual capital to the organization the survival and development of the role of more and more important. In order to promote national competitiveness, in the world today are trying to build a national innovation system, focus on efficient integration of technology and economy. Production, is the national major strategic deployment depth fusion, the knowledge has become the world compete to promote technological innovation organization form, with intellectual capital as the main body of intellectual capital intensive of institutions of higher learning and scientific research institutes, is becoming each country in the world economy forces the key to win the competitive advantage.

Key words: Production, depth of fusion, intellectual capital transformation, research reviewed

Introduction

Xi jinping, general secretary, put forward in the big report to "deepening the reform of science and technology system, the establishment of enterprise as the main body, market oriented, the depth of the fusion of technology innovation system, strengthen support for small and medium-sized enterprises (smes) innovation, promote the transformation of scientific and technological achievements." At the same time, he also stressed that "intellectual resources is a country, a nation's most valuable resource." This is a new orientation, new requirements for colleges and universities, and important content of the xi general secretary education thought.

1. Research significance

1.1Depth integration of production, study and conducive to the intellectual capital into realistic productivity

The central "on deepening the reform of science and technology system to speed up the construction of national innovation system opinion" pointed out that research institutes and institutions of higher learning for more support and service for the enterprise technology innovation, promote innovation elements such as technology, talent flow to the enterprise research and development institutions; Support industry backbone enterprises and research institutes, institutions of higher learning set up technology research and development platform and industry technology innovation strategic alliance, cooperation to research and develop the core key technologies and related basic research, cultivate talents together, sharing scientific research; To encourage research institutes and institutions of higher learning of science and technology personnel to establish science and technology enterprises, promote the research and development achievements."" much starker choices-and graver consequences-in" national science and technology innovation plan "pointed out that to" around get through the channel of technology and economy, to the technology market, capital market and talent market, by means of open resources sharing, the surrounding industrial chain deployment innovation chain, perfect capital chain around innovation chain, strengthen the cooperation between all kinds of innovation main body, promote the combined closely with the production, use, promote the development of science and education integration ".Through production, depth fusion, cluster innovation resources, and promote the innovation elements flow and optimized allocation, to speed up the intellectual capital into realistic productivity, stimulate the innovative entrepreneurial energy of the whole society.

1.2 depth integration of production, study and conducive to the intellectual capital into the industry competitiveness

With human society into the era of knowledge economy, competition between countries is increasing, all countries gradually realize the industry competitiveness is the core of national competitiveness, and enhance the competitiveness of industry, the key is to have key generic technology industry. At present, the upgrading of industry technology accelerated, key generic technology industry has become the bottleneck factor in the development of industry, therefore, focus on the social

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from all walks of life science and technology power support industry key generic technology research and development is to promote the competitiveness of the industry, thus in the fierce international competition environment based on the key. Local colleges and universities focus on intellectual capital of the industry key generic technology research and development activities in the industry, can improve the ability of effective supply of key generic technology industry, industry development to provide strong support to the industry.

1.3 depth integration of production, study and conducive to the intellectual capital into service ability of colleges and universities

Production, deep integration of intellectual capital transformation is the important embodiment of social service function and important carrier. At present, the development of China's reform is in a crucial stage, build a well-off society in an all-round way of the task is very arduous, complicated economic and social development in various contradictions and problems, needs to take effective measures to crack. At the same time, China is a large country, and the basis of regional development, conditions, resources, objectives, priorities and challenges of each are not identical, such as need more deeply integrated with pertinence and effectiveness of the production, the intellectual capital transformation of policy measures and solutions. Since China's reform and opening up, especially since the implementation of the "double top" strategy, each province and at least one and so on, the higher levels of study, the discipline more sufficient talent comprehensive strong "double top" university, the goal is to major national demand as the guidance, around the economic and social development and national strategy, to build with Chinese characteristics and a new type of intellectual capital in university, the influence of the world focus on improve the high level scientific research ability and improve the service of the country's decision-making ability and solve a major bottleneck restricting the development of economic and social problems. Relying on local university to study, therefore, the intellectual capital transformation of depth fusion, is the economic development of one of the essential, feasible and urgent measures of innovation. Only speed up deepening study depth fusion, can provide the local university intellectual capital transformation of scientific and effective solutions, provide intellectual support for the innovation of economic development. Local colleges and universities is an important force in China's higher education, in education, science, technology and personnel system has the irreplaceable important position. In the long-term service in the economic development in the course of running a school, local university basic professional Settings around the industrial chain, gradually formed a closely related to industry, relatively centralized system of characteristic specialized subject. At present, how to take advantage of local colleges, through production, intellectual capital into depth fusion, to promote scientific and technological achievements, industrialization, capitalization innovation service for economic development is an urgent subject that we face.

2. Research theoretical basis

On the depth of production, integration of intellectual capital transformation needs management, sociology, economics and other related theory as the support, the intellectual capital in reference to previous research results, based on the related theory, transaction cost theory of intellectual capital, knowledge management theory and the theory of triple helix for later production, the depth of the fusion of the intellectual capital translational research provides a theoretical basis.

2.1 theory of intellectual capital

Intellectual capital theory is mainly based on the new economic growth theory and human capital theory. Intellectual capital research mainly experienced three stages: the first stage from 1830 s to the 1830 s, the theoretical study of intellectual capital to stay at the macro level. The second stage from 1960 s to 80 s, American economist John. Kenneth Galbraith proposed the concept of intellectual capital. The third stage since the 1990 s, American scholar Thomas. A.S tewar first systematically the connotation of the intellectual capital is put forward. Intellectual capital has become a hot topic, scholars from different Angle and level the connotation of intellectual capital and its management is given, and methods. Domestic research on intellectual capital can be roughly divided into three categories: introduction to foreign intellectual capital theory, are reviewed, and preliminary application; Spontaneous

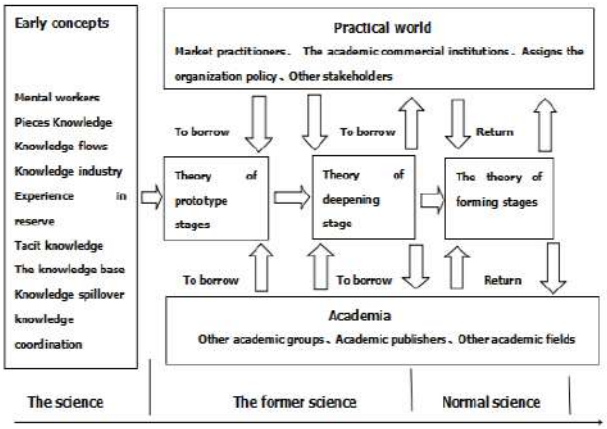

Figure.1 intellectual capital related theory of evolution

2.2 knowledge management theory

In the early 1960 s, American management professor Peter f. Drucker, Dr First puts forward the concept of

knowledge workers and knowledge management. In mid and late 1990 s, Boston university professor of management information systems, Thomas. H.Davenport puts forward the two-phase theory of knowledge management and knowledge management model, is the main theory to guide knowledge management practice. Meanwhile, Japan's nonaka, Ph.D., professor of management in view of the western management and organization theorists one-sided emphasis on technical management and ignores the views put forward some questions of implicit knowledge, and systematically discusses about the difference between implicit knowledge and explicit knowledge, provides us with an effective way to make use of the knowledge innovation. So far, domestic experts on foreign scholars made a preliminary exploratory research of knowledge management, think the current theories of knowledge management can be roughly divided into technical school, behavior, school school four school, economics, and strategy.

2.3 The transaction cost theory

Depth, new institutional economics, production, integration of intellectual capital transformation essence is a kind of activity is characterized by knowledge flows. No matter adopt what kind of production, integration of intellectual capital transformation model, transaction costs are there. In the patent or proprietary technology license transfer, because the market price mechanism, is bound to generate transaction cost. Even in the mode of production-teaching-research combination, within the enterprise, entrepreneur's administrative coordination also need to organize the funds, is the internal transaction cost. And long-term cooperation between research institutions, universities and enterprises, joint venture or technical investment, the existing external transaction cost, also exist in the internal transaction cost. Transaction cost theory is put forward and constitute the concept of transaction cost of transaction cost, as the famous British economist RonaldH. Of Couse, published in 1937, author put forward the nature of the manufacturers, he explained transaction costs for the "cost of using the price mechanism", think the enterprise organization management cost remains the same as a substitute for the market. Followed the Couse, Oliver Williamson, further elaborated the concept of transaction costs, and analyzed the characteristics of the trade from the dimension of transaction, the transaction cost theory and method of one step application to the study of the problem of economic organizations, expand the transaction costs of research and application field.

2.4 The triple helix theory

American sociologist Henry Etzkowitz with Dutch scholar Leydes Dorff published in 1995 entitled "university, industry, and government relations, the formation of the triple helix of academic papers, the same year, and cooperation has published a" university - industry - government triple helix relations: the development of knowledge economy lab ", marks the formal

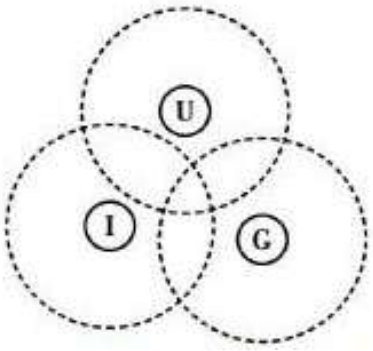

Figure.2 triple helix model of interaction

3. Research status

3.1 Depth integration of production, study and research status abroad

Depth integration of production, study and research with the development of new and high technology industries, economic value, in the process of economic development in the process of social development has important strategic position, has reached broad consensus in the countries all over the world. Especially developed countries, fiscal, financial and tax preferential policies through legislation, to establish production, intermediaries depth fusion, create good external policy environment for production, depth fusion, greatly promoted the depth integration of production, study and development. After world war ii, the United States began to promote university-enterprise cooperation, from the original "government - corporate - university joint laboratory" to "university - industrial cooperation center", from belongs to the development and research institute at the university of up to more than 100.Established in 1948, the Massachusetts institute of technology "industrial liaison project". In Japan is introduced, meanwhile, the integration of "study", the Japanese research institutions are divided into the government research institutes and university research institutions, the private sector research institutions, the biggest characteristic is its science and technology policy to implement "technical state", the "study" system for Japan later high-speed development of science and technology has played a pivotal role. Japanese investment 300 million yen calls for nearly 30 years to set up in colleges and universities for technical center " tsukuba science city". Germany began to university depth integration of production, study and cooperate with German chemical industry. Michael Tours1982 years in the invention of industrialization: a case study of German chemical industry "in

the research of the German chemical industry development in detail. Through the analysis of foreign literature found that current study of the patterns of foreign scholars on the depth of production integration mainly concentrated in the following several aspects:

3.1.1 Mode research

Atlan the integration of production, study and development is divided into six categories: one is GeneralSupport; Contract Researeh. Researeh Centers and institutes; Research Consortia);Industrial Associate/Affiliate designed; New Business Incubators and Research Parks. Steward & Gibson even fused production, defined as 72 types. International organization for economic co-operation and development (OECD) summarizes various fusion relations, namely the auxiliary general cooperation, informal cooperation study, research, knowledge transfer and training plan, government subsidies cooperation study plan, alliance and cooperation research center.

3.1.2 Motivation research

Industry integration motivation usually includes four aspects: first, has obtained the high quality of science and technology researchers; Second, access to the front of research and technical knowledge; Three, looking for a special problem of source of knowledge; Four is the use of academia of special equipment, etc. For the school and enterprise integration, the motivation is more easy to understand, such as government budget cuts, the enterprise will become an important source school sponsored research funding; School and enterprise integration, for the teachers and students to provide opportunities for physical contact to solve practical problems. The purpose and current situation of development of the economy in a large extent.

3.1.3 Process research

Doutriaux research Canada 11 more active knowledge, industry cluster, analysis study depth fusion in these clusters' influence in the development process, summed up found that cluster developing Canadian colleges and universities is not only the drive of social and economic development, but also the catalyst of rapid economic development. His research results verified the depth integration mode of production, study and operability, it is concluded that the cluster development and success are credited to the government laboratory and industrial cooperation. MotohashiKazuyuKi analyzes the movements of the depth in the process of the integration of production, study and technology-oriented enterprises, this paper expounds the production, after entering the 21st century the first 5 years rapid development momentum in the small business depth fusion, think depth integration of production, study and the impact on the productivity of small and medium-sized enterprises will be much higher than for the influence of large enterprises. Jian Cheng Guan, Yarn, Richard c. Chiu notes Mok2015 years investigation and analysis, through to the Beijing 950 companies that degree of industrial innovation and production, is proportional to the depth of fusion. But if use economic indicators to measure production, fusion result, the integration of production, study and appear relatively ineffective. It also shows that the depth of fusion of industrial innovation of production, study and research in our country's incentive effect remains to be improved.

3.2 Depth integration of production, study and research situation at home

Since the 1980 s, the integration of production, study and development in colleges and universities in our country and to use, and soon becomes an effective educational mode. It is the inevitable outcome of the market economy combined with the knowledge economy, is an important part of national innovation system. Unlike Europe and the United States and other developed countries, China's production, the main body of the fusion system in colleges and universities. Through special fund subsidy policy mechanism, to a national science plan, based on the local pillar industries, is divided into two production, national and local fusion development field. Universities in more than 30 years in the process of the integration of production, study and practice to explore, completed the transformation from elite education to popular education, and focused on the theory of integration of production, study and research has also gradually thorough, systematic, comprehensive, practical exploration scope expanding gradually, the content and the gradually diversified, fusion mechanism gradually reasonable, gradually increase cooperation and benefit, have formed a series of successful basic experience. By analyzing the related literature material, the domestic production, depth of fusion research situation the aspects can be summarized as follows:

3.2.1 Need for research

Integration of production, to promote the colleges and universities and research institutes of scientific research level, promote enterprise technology progress and the transformation of the country's capacity for independent innovation is playing the huge role, it has long been a consensus in the industry. Experts and scholars generally believed that the competitiveness of the fusion can improve the cooperation of industry, the main body, not only improve school teaching condition, the way of training talents and innovation ability, and solve the transformation of scientific and technological achievements in the financial and technical market have problems such as the effective method. At the same time, the integration of production, study and improve enterprise not only the intellectual capital transformation of science and technology, and technology innovation with science and technology innovation activities, and countries with series connection, the structure and operational efficiency of national

innovation system directly affected by the size of the integration of production, study and cooperation efficiency, therefore, the accurate understanding, mastering and solve the relationship between the core technology and the transformation of intellectual capital, to promote science and technology is consistent with the social and economic development, for promoting the transformation of the intellectual capital of fusion depth study is particularly critical.

3.2.2 Countermeasures study

With the market economy fast development, the production, also appeared a series of problems in the process of depth fusion, such as the enterprise did not satisfied with scientific research, universities and research institutes of scientific research achievements have no corresponding enterprises operate. A vast amount of production, thus appeared in academia depth fusion fusion development present situation, existing problems and restricting factors and countermeasures of theoretical research. Applying theory of the status quo of the research mainly include: a, increases the scientific research personnel and university teachers awareness of integration of production, study and initiative gradually increase; Second, expanding scale and level fusion in-depth study, Three, universities and enterprises according to market rules and relevant laws and regulations change, changed the past to the nature of the blind and passive to accept. Fusion process of theory research mainly include: information asymmetry between between colleges, scientific research is not required to produce; Fusion of uneven distribution of interests; Lack of financing channels, do not have enough funding; No relevant government laws and regulations for protection, each side there are a number of senior management problems, etc. Then, in view of the present situation and the problems existing in the fusion process, experts and scholars have put forward the corresponding countermeasures and Suggestions, summarized as follows: first, pay attention to market mechanism, take the market as the guidance, encourage the enthusiasm and initiative of all parties involved in fusion between production; Second, accelerate the construction of the government policy laws and regulations, improve the legal system of science and technology, enhance macro-control policies; Third, establish and improve multi-channel investment and financing system, encourage enterprises and Banks to establish large projects good fusion of fund; Fourth, the establishment of production, the integration information platform, the construction of large data, enhance the communication between the production; Fifth, improve the distribution system, coordinate the interests distribution of the integration of production, study.

3.2.3 Mode research

For the study of the theory of the integration mode of production, study, by researchers from the point of view of the starting point of view is different, so for the fusion model generalization is not the same. Jing-qin su by use of the theory of transaction cost economics integration of production, study and communication cost, negotiation cost and cost performance of transaction cost analysis, the internalization of various fusion model for the study of our country, half the internalization and externalization of three theoretical model, and discusses the conditions and measures the internalization and externalization. Gui-long zhu Angle from the concept of network organization, puts forward the integration of production, study and innovation network organization mode, and subdivided into the integration of production, study and network mode technology collaboration model, compact cooperation mode and integration mode, etc. Ying-jun wang from the perspective of knowledge sharing, and puts forward the "study" virtual r&d organization mode, production, integration of virtual r&d organization mode can be divided into the government's leading traction type, industry and research and developments, and characteristics of three kinds of virtual integration mode are described.

3.3 Intellectual capital transformation research status abroad

Foreign scholars respectively from areas such as management, sociology, synergetics, psychology explanation and definition of intellectual capital, and the research conclusion and review and evaluation, set up a system for the future study of analytical framework. At the same time, foreign research on knowledge transfer are also relatively deep, this is a result of the main western developed countries industrialization early, early in the development of social economy in the world faces the dilemma of enterprise innovation, under its impetus, western scholars studied the enterprise how to from a nonprofit research organization for intellectual capital, and effective into can produce economic benefits of real capital. Foreign intellectual capital research mainly has the following several aspects:

3.3.1 Intellectual capital research

Economist Galbraith1969 discovered in enterprise market fair valuation and there is always a certain gap between the book value, after studying, he will be caused by the difference comes down to enterprise intellectual capital, he thinks that enterprise intellectual capital, although can't see the value from the statement, but the existence of intellectual capital loss increased valuations, enhance the enterprise the production efficiency, is real advantage resource of enterprise, this is the earliest about intellectual capital. Shih thinks the key to promote the competitiveness of the enterprise itself continuously from senior mining and development of various kinds of latent variable dimension level, and the level of transformation of each dimension to available and can be transferred to create value. The process for a nonprofit

organization is urgent affairs. Bamey further expounds the entrepreneurial organization by intellectual capital and analyzed the cause of development and utilization to keep its competitive advantage. He thought first of all, the enterprise will improve defensive barriers for the development of intellectual capital, increase their own enterprise management mode of replication, this differentiation will bring the real returns for the enterprise and for a period of time to ensure the enterprise in the competition in a dominant position; Second, intellectual capital is a kind of strategic assets, its function is one of the features of collaborative, it can stimulate the use of various resources and integration, and improve enterprise value from the rational Angle. Delgado knowledge from raw material, debris, experience, corporate culture, customer loyalty and a series of indicators under the perspective of comprehensive, defines the scope of intellectual capital, mainly from the perspective of creating benefits explain the intellectual capital. Zack and Darroch pointed out that intellectual capital is the key element of the enterprise, is a key factor to affect the enterprise survival. Enterprise survival foundation is to create benefits, maintain high benefit is the basis of innovation, and maintain the strong innovation ability is the decisive factor, is whether the enterprise has its own knowledge base and database. And intellectual capital is the enterprise keep the vitality of knowledge repository and talent pool, embodied in the enterprise development, transformation and use of intellectual achievements. Serenko intellectual capital will be summarized for intangible assets in the organization. Referred to in the intangible asset is different from the accounting of intangible assets, is refers to all can't use the specific accounting embodied in the enterprise but the actual real return benefits for the enterprise's assets.

3.3.2 Rainfall distribution on intellectual achievements transformation research

Intellectual achievements bring huge economic value, but the knowledge itself can't be transformation, should be done with the help of other resources knowledge capitalization process. Foreign scholars defined intellectual capital transformation to knowledge transfer between organizations, especially the knowledge transfer to enterprises. Bontis believes that knowledge capitalization process should include three aspects: one, study depth fusion, think the integration of production, study and is the first prerequisite of knowledge capitalization; Second, scientific research achievements commercialization prompted provide economic benefits for the enterprise scientific knowledge, but must face to all the law before commercialization of belonging and value evaluation criteria system problems; Three, collaborative innovation efficiency, namely knowledge capitalization not by an organization or a person alone, but on the collaborative innovation to increase the efficiency of knowledge capitalization. Collaborative innovation is the engine of knowledge capitalization and energy base. Schiuma through comprehensive study, support knowledge capitalization process depends on two aspects: the scientific research organization in a planned way of promotion, the colleges and universities need to establish a long-term support results promotion platform and system, ensure that don't appear backlog knowledge achievements; Knowledge resource, knowledge to do resources of colleges and universities, on this basis, to ensure that actual effect of knowledge capitalization.

3.4 The domestic current situation of the intellectual capital transformation

3.4.1 Track intellectual capital connotation and characteristics of the study

Tsinghua university system to solve the practical problems facing the enterprise management and make up for the deficiency of the existing theories, for the purpose, to promote enterprise's technological innovation performance of 149 Chinese companies to track case investigation and empirical research, on the basis of combing the existing literature, puts forward a new measurement model of intellectual capital, and empirically the open innovation perspective of the relationship between enterprise intellectual capital and innovation performance. System team, under the perspective of open innovation capital evaluation model of corporate governance includes internal and external two kinds of intellectual capital. For each kind of intellectual capital, have three corresponding structural index. Such as internal intellectual capital including human capital, structure capital and relationship capital within three elements, external intellectual capital includes the external human capital, external capital structure, external relationship capital three elements. Through the empirical analysis of the 149 Chinese companies, found that the internal and external factors of intellectual capital and intellectual capital were significantly related to the innovation of the enterprise performance, shows that the higher the degree of innovation and opening of enterprise can pass new intellectual capital evaluation model to explain and predict the innovation performance of the company. This study verifies the internal intellectual capital, external intellectual capital and technology innovation performance model, the relationship between intellectual capital and found that the enterprise internal and external combination of intellectual capital to the synergistic effect of technology innovation. On the one hand, to reconstruct the basic connotation of intellectual capital, and presents a new measure model, for the open innovation perspective of enterprise intellectual capital research provides a new reliable model; On the other hand, due to previous studies rarely consider the enterprise external intellectual capital to promote technology innovation, therefore the results of the study on the enterprise

to better manage the internal and external intellectual capital to promote enterprise's technology innovation performance has important practical significance. And zhang si-jing li argues that intellectual capital is the enterprise important resources on the one hand, decides the competitive advantage of enterprise, on the other hand, the creation of intellectual capital return ability, and is closely connected with the enterprise management. High-quality intellectual capital can promote the enterprise to promote efficiency of management, and scientific management, at the same time, efficient management and reasonable organizational structure, and can stimulate the role of intellectual capital to the greatest extent. Tian-ying jiang, jun-jiang wang through the orientation of intellectual capital in the process of learning organization, meaning that intellectual capital includes two aspects: one, usually told by intellectual capital basic elements, including the quality of members of the organization, the organizational structure of high efficiency, interpersonal harmony, organization members to experience the richness and members of the organization of knowledge sharing willingness, organizational knowledge ownership series common clear of the content of intellectual capital; Second, after the collaborative innovation, learning organization and deep learning, develop new knowledge or intellectual capital elements. Think a research organization of intellectual capital is mainly refers to the organization according to the existing intellectual capital elements of development innovation, the ability to create new intellectual capital elements. Yang xm that intellectual capital is including interpersonal relationship, organizational efficiency, work experience, the degree of sharing, organization atmosphere, a series of intangible qualities, is an intangible asset. Knowledge is the most important strategic intellectual capital assets. Knowledge is the most representative content in intellectual capital, intellectual capital transformation in the research, translational research of intellectual achievements, the most can represent the efficiency of conversion from intellectual capital.

3.4.2 Research to the influential factors of intellectual capital transformation

JinghuaLi and Xiaoran Chang research shows that hinder the performance of the biggest factors of intellectual capital transformation causal ambiguity is the intellectual capital, its block of intellectual capital transformation is far greater than in other factors such as stealth. And scholars believe that transformation distance (intellectual capital organization differences between both senders and just input side) and the negative correlation between intellectual capital transformation performance, that the smaller the difference between groups, are more likely to achieve intellectual capital transformation. Ye Shu navigation use meta analysis method to study the factors that influence the transformation of enterprise intellectual capital transformation of finishing the research conclusion, found that negatively related to the transformation of intellectual capital were the main influencing factors of latent, fuzziness and embedded within, positive factors include only absorptive capacity, the strength of incentive validity and trust in organization, into the way of solving and transformation, etc. In the negative factors hinder the transformation of intellectual capital, the hidden significance of, its ability to hinder the transformation of intellectual capital is strongest. The above factors is not influence the effect of the direct sum in knowledge conversion, but by multiple indirect effect on intellectual capital transformation.

3.4.3 Intellectual capital efficiency research

RenRong to measure the efficiency of intellectual capital transformation done in-depth research. Put forward the qualitative description method, the objective and quantitative method and quantitative method, three kinds of more reliable and subjective measure of the system. Qualitative description method by judging the main body of the professional, personal preferences and other factors, so the relatively strong randomness, usually used as confirmatory or auxiliary method. Objective quantitative method advocate on the efficiency of the transformation of intellectual capital evaluation used as objective, monetization, measurable indicators to measure, tools used mainly for DEA and SFE. Quantitative method refers to the personal subjective opinions and views through certain programs into measurable, calculation, through the way of assignment, make individual apiration analysis, in order to achieve the conversion of intellectual capital performance evaluation purpose, three ways have their own characteristics, complement each other. Lu Bing on intellectual capital transformation efficiency is a comprehensive definition. From the Angle of time is defined as the intellectual capital in a certain period of time and the complete transformation of the ratio of the time of intellectual capital. The definition can be understood as a dimension of intellectual capital transformation efficiency. From the perspective of cost is defined as the complete amount of intellectual capital transformation and the group of intellectual capital transformation would put all kinds of costs include labor costs, resource costs, and organizational capital, the ratio of the integrated resources. The method can reflect the economic efficiency of intellectual capital transformation, and intellectual capital efficiency measure of one of the indispensable dimension. Zhou Linhai, original long hong do to the characteristics of the intellectual capital transformation efficiency research. That intellectual capital efficiency possess novelty, value, multifaceted and multilayered characteristics. Novelty is mainly manifested in the organization transformation of intellectual capital is always with new ideas, new perspectives, new ways to promote transformation,

novelty become intellectual capital efficiency booster, sex refers to the value in the process of the transformation of intellectual capital to create new value, for intellectual capital both senders creating value through the transformation of intellectual capital, intellectual capital the receiver for the use of the intellectual capital value, the whole intellectual capital conversion efficiency based on the value of sex. Multiple side refers to the intellectual capital efficiency involves a variety of lateral reflection index, multilayered refers to intellectual capital conversion efficiency can be either organizational efficiency, may also be members of the organization intellectual capital between the conversion efficiency, at the same time can also be members of the intellectual capital efficiency across the organization.

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Study of Capabilities Requirements of Agri-tech Transfer Workers in China: Human Resources Perspective

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Abstract: During the process of agri-tech transfer, in addition to agricultural science and technology achievements themselves, the agri-tech transfer workers who is in charge of the transformation of agricultural science and technology achievements is another key factor influencing the probability of success in agri-tech transfer. The agri-tech transfer market is currently very eager for talents with comprehensive capability. This paper studies the main modes and existing problems in the transformation of agricultural achievements. Then, in the perspective of human resources, it analyzes the comprehensive capabilities requirements for transforming agri-tech by discussing the role of full-time personnel in the transformation of agri-tech. Finally, several suggestions is given for improving agri-tech transfer.

Key words: Chinese agriculture, agricultural science and technology, achievement transformation, human resources, capabilities

Introduction

Agricultural scientific and technological achievements (agri-tech) transformation in China is widely considered as an activity of experimentation, demonstration of science and technology, training, and promotion valuable of agri-tech to form new products, new methods, and development of new industries (Zhang et al., 2011; Li et al., 2016). According to the statistics of the Ministry of Agriculture and Technology in 2008, China has about 7,000 agricultural science and technology achievements annually, but the conversion rate is only 30% to 40%, with a large number of agri-tech being difficult to transform, and there is still a big gap between the conversion rates of 70% to 80% in Europe and other developed countries (Yang et al., 2008).

The issue regarding how to speed up the transformation of agri-tech and improve the effectiveness of agri-tech attracts many researchers' attention. There are many reports on the transformation of agri-tech, mainly studying the major transfer models and networks (Wang, et al. 1991; Moschitz 2015), problems(Moshelion et al. 2015; Cao, et al. 2016), and countermeasures of the agri-tech (Rome 2015; Zhong, et al. 2018).

However, there is almost no relevant research on the full-time transfer workers involved in the transformation of agri-tech. In fact, one of the most basic and most important roles in the process of agri-tech transfer is full-time transfer workers.

In this paper, firstly, it studies the main modes and existing problems in the transformation of agricultural achievements. After that, in the perspective of human resources, it analyzes the comprehensive capabilities requirements for transforming agri-tech by discussing the role of full-time personnel in the transformation of agri-tech. Finally, several suggestions is given for improving agri-tech transfer.

1. Flows of agri-tech and agri-product in agriculture in China

The transformation of agri-tech in China is a complex systematic project that involves all aspects of agri-tech and products from production to circulation, consumption and consumers, as shown in Figure 1 (Zhou, et al. 2017). The traditional form of classical technology transfer is that technology providers such as universities and research institutes provide agri-tech to farmers or agricultural-related companies. Producers sell products to sales channels, and then sales channels sell agri-products to consumers. Due to the development of information technology, the sources of agri-tech have become diversified. Not only can scientific research universities and institutes provide technology, channel providers can provide agri-tech as well. And even consumers can also provide technology in the form of feedback. All roles need coordinated orderly and efficiently operate among government, research institutes, extension agencies, and agricultural production entities.

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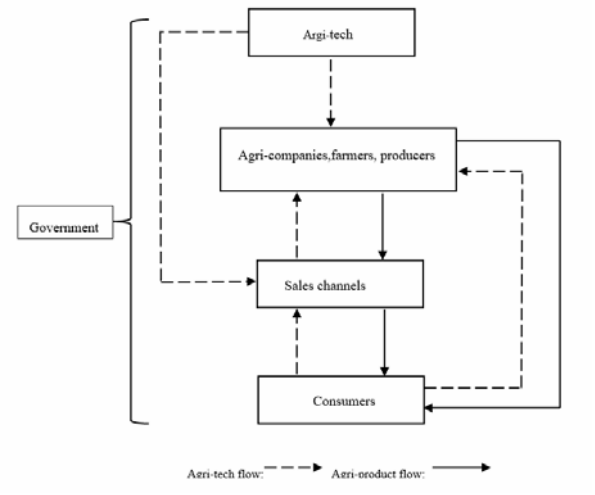

Figure 1. Framework of flows of agri-tech and agri-product in agriculture

2. Main transfer modes of agri-tech transfer

Currently, the research on the promotion and transformation model of agri-tech has seen from the point of view of the dissemination and promotion center that the transformation models for the transformation of agri-tech mainly including agri-tech Promotion Station, enterprises (Liang, 2016).

Table.1 The main modes of transformation of agricultural science and technology achievements

Leading role of transfer model	Examples	Advantage	Disadvantage
Agri-tech Promotion Station	Agricultural science and technology promotion agencies led by governments at all levels.	Non-profitable, with good credibility, influence and radiating effects.	There are many agricultural technology extension workers but the overall quality is low, lack of comprehensive talents.
enterprises	Agricultural enterprises, especially agricultural leading enterprises	The main body of transformation and popularization of agri-tech.	The approaches of cooperation and promotion are not enough, and the connection with grass-roots farmers is not closely enough.
Farmers' Professional Cooperation Organization	Agricultural associations, agri-tech service agencies, technology property exchanges, etc.	With agri-tech leaders as the main body, it can be extended to millions of farmers.	The quality of grassroots farmers is relatively low, and the development of grassroots agricultural cooperatives is not standardized.
Agricultural Research Universities & Institutes	Agricultural Academy, Agricultural School, etc.	Directly face the needs of peasant-related enterprises and peasant households, reduce the time and information consumption of intermediate links, and increase transfer efficiency.	The incentive mechanism is not perfect, and the enthusiasm of researchers is insufficient.

3. Main problems existing within agri-tech in China

First of all, the transformation of agri-tech lacks effective organization and links. On the one hand, there are a large number of agri-tech that can be provided by agricultural scientific research institutes, and a small number of full-time personnel engaged in the transformation of argri-tech. This is also the main reason for the low transfer rate in China. On the other hand, the scientific concept of the scientific researcher is not strong, and most of the researchers pay attention to the novelty of the topic and the creation of technology, and is not good at seeking innovation from the market and on the needs of the enterprise.

Moreover, unreasonable title evaluation and incentive mechanisms is another reason for low transfer rate for Chinese

agri-tech transfer (Zhou, et al. 2017). Firstly, most scientific research institutions in China do not have a sound incentive mechanism for agri-tech tranfer. The assessment standards emphasize the number and level of published papers, while ignoring the transfer indicators of agri-tech. Secondly, there is a lack of implementation rules and interest distribution mechanisms related to the agri-tech transfer. The enthusiasm of scientific research personnel for transforming results is insufficient, and the effectiveness of results transformation needs to be further improved. In 2015, Chinese government published a new policy to improve technology transfer. This new policy enables researchers and professional workers can not only enjoy the money achieved from agri-tech transfer, but also using it as an index to evaluate professional titles, which leads to a high

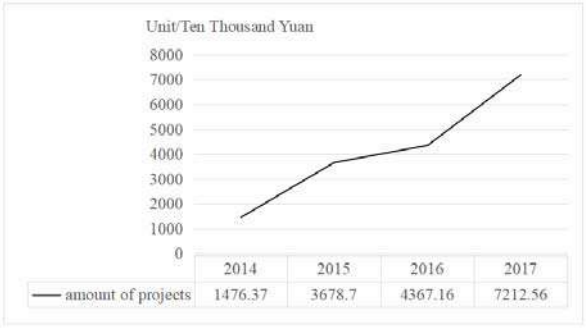

Figure 2. Changes in the amount of transfer projects from 2014 to 2017 in GDAAS

Furthermore, the agri-tech intermediary service agencies refer to the institutions and activities which serve as bridges between suppliers and demanders of agri-tech. However, the current evaluation system for agri-tech is not perfect, and the problem of slow development of agri-tech intermediary service organizations is urgent and serious. The transformation of agri-tech lacks the necessary market support and financial support, which seriously affects the enthusiasm of all roles.

4. Requirements of professional agri-tech transfer workers in perspective of human resources

Based on the analysis of the transformation of agri-tech mentioned above, in the transformation process of agri-tech, the role of full-time personnel is indispensable. In accordance with the requirements for the transformation of agri-tech, full-time professional workers should possess some capabilities to effectively communicate and cooperate with the following all parts as shown in Figure 3.

The transformation of agri-tech is very professional, requiring the participation of high-quality and high-level talents, with a strong spirit of innovation. The full-time and professional workers involved in the transformation of agri-tech need not only a solid foundation of agricultural expertise, but also a wide range of knowledge, such as knowledge in business management, knowledge in laws, trade, marketing, and extension, business management, and the transformation of negotiation skills. Professional full-time workers should be good at capturing the needs of enterprises, and correctly grasp the mode and method of agri-tech.

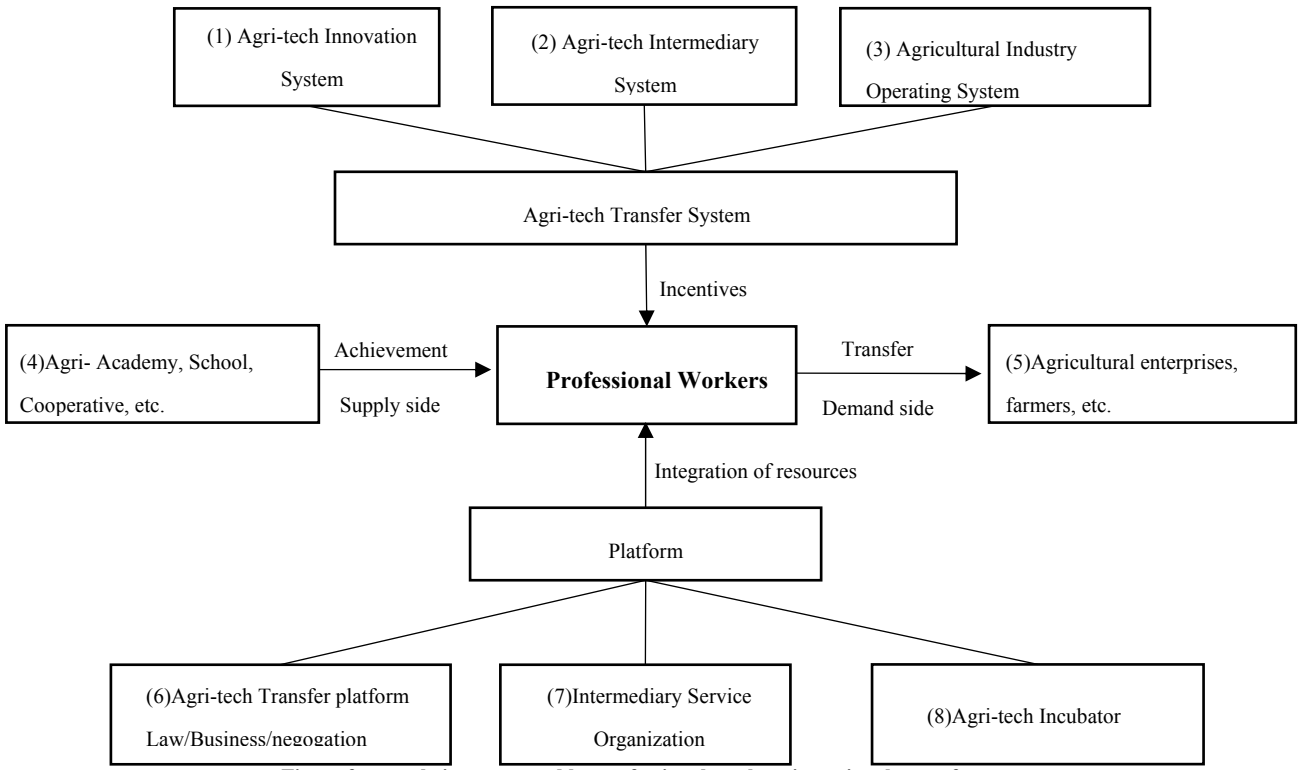

Figure 3. parts being contacted by professional workers in agri-tech transfer

4.1 Equipped with strong professional and rich multidisciplinary knowledge

The transformation of agri-tech is very professional, requiring the participants equipped with high-quality and high-level talents as well as a strong spirit of innovation. The full-time professional staff involved in the transformation of agri-tech need not only a solid foundation of agricultural expertise, but also a wide range of multidisciplinary knowledge, such as knowledge in business management, knowledge in laws, trade, marketing, and marketing, and the transformation of agricultural science and technology achievements. Should be good at capturing the needs of enterprises, and correctly and quickly grasp the mode and method of transformation of scientific and technological achievements.

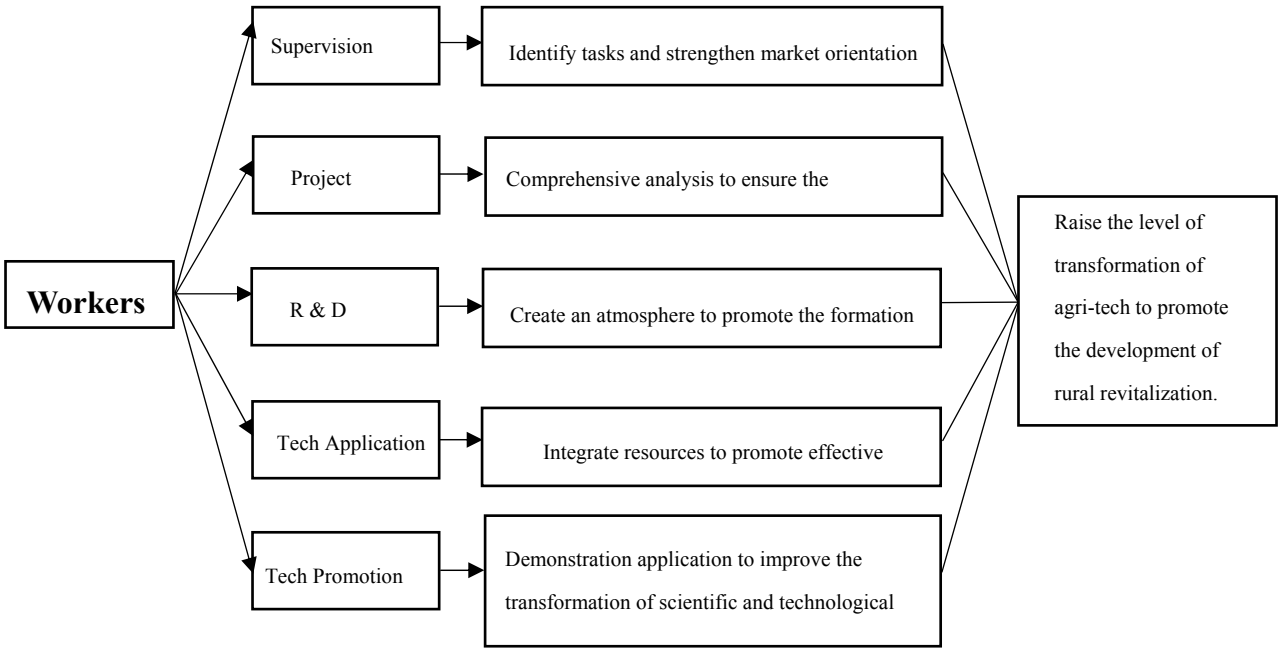

Figure 4. Effect of Professional Staff in the Transformation of agri-tech.

4.2 Equipped with teamwork spirit

Agri-tech transfer team which is made up of professional transfer worker is emphasis on establishing efficient and professional agri-tech transfer teams. This type of team, as the organization and implementation subject of promotion and realization of industrialization and commercialization of agri-tech, has a decisive role in the performance and quality of professional application of results. Individuals within the team should have teamwork spirit and strong collective awareness. With professional knowledge to support team building and development, in order to enhance the team's cohesion and creativity in order to play the best role of teams in the agri-tech transfer.

4.3 Equipped with related work experience

Professional transfer workers should have certain perceptual knowledge and understanding of scientific research and development. If the full-time staff has a certain experience in the transformation of agri-tech and equipped with related knowledge structure in technology promotion and extension. Then they will be familiar with the agri-tech extension and negotiation process and practices. Being good at dealing with demanders of agri-tech and having experience in the implementation of the project would have a deep understanding of the situations and problems that may arise during the transformation of agri-tech. When workers have related work experience, they will be able to fully understand the suppliers' and demanders' various needs and problems, and make appropriate treatment.

4.4 Equipped with professional ethics and excellent communication skills

The agri-tech transfer professional workers have a kind nice style, temperament and attitude to win the customer's goodwill and trust. Not only should professional workers be considerate of reasonable and intelligent, they should also be honest, patient and self-confident. Specialized workers for the transfer of agri-tech should also be able to accurately select and use vocabularies, and clearly and completely express the advantages and information of the quality and characteristics of certain technology. Being good at communicating the changes, grasping the atmosphere of negotiation, and effectively promoting the progress of outcome transformation activities would be helpful. Becoming a excellent full-time transfer worker in agri-tech need not only the above comprehensive qualities, but also more practical training and subjective participation awareness.

5. Conclusion

In summary, this study presents common flows of agri-tech and agri-product in agriculture in China, current transfer modes of agri-tech transfer in China, main problems existing within agri-tech in China. Then, in the perspective of human resources, it analysis the participates of agri-tech transfer, especially the network of professional worker in transfer. It concludes that professional workers will contact at least eight aspects of participates including (1) agri-tech innovation System, (2) agri-tech intermediary System, (3)agricultural operating system, (4) agri- academy, universities, cooperative, etc.,(5) agricultural enterprises, farmers, etc., (6) agri-tech Transfer platform, (7) law, business, negotiation intermediary service organization, (8) agri-tech Incubator and so on. In addition, it discusses the effect of Professional Staff in the Transformation of agri-tech via five approaches. Finally, it points out the requirements of professional agri-tech transfer workers in perspective of human resources and gives four suggestions regarding being an excellent professional transfer worker.

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Application effect of fine management mode in hospital medical record management

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Abstract: ***Objective:*** To study the effect of applying fine management mode in hospital medical record management. ***Methods:*** The one-year research from January 2017 to December 2017 after the implementation of the fine management mode is considered as the observation group, and the one-year research from January 2016 to December 2016 before the implementation of the fine management mode is considered as the control group; the fine management mode of application is analyzed. ***Results:*** the qualified rate of the first page of the medical record, the rate of missing page and missing item of the medical record in the observation group were better than those in the control group. The qualified rate of medical record management in the observation group was higher than that in the control group. In the observation group, the satisfaction degree of the medical personnel to the medical record management was 94%, and the satisfaction degree of the patients to the medical record management was 98.2%, which was higher than that of the control group (760.89%, $P<0.05$). ***Conclusion:*** the application of fine management mode in hospital medical records management can improve the quality of hospital medical records management, enhance the satisfaction of medical personnel and patients' satisfaction, and can be popularized in clinical practice.

Key words: Hospital medical record management, fine management mode, satisfaction degree

Introduction

In the management content of the hospital, the medical record management belongs to the main part; the medical record records the patients' condition, the diagnosis result in the hospital treatment method and effects in detail[1]. The traditional hospital management cases only focus on the management of the storage, so it is mainly guaranteed that the medical record is not lost and damaged; the management isn't meticulous and in-depth, so various problems are easy to appear[2-3]. At present, due to the increasing information level, hospitals have strengthened the informatization construction of all kinds of management, combined with the gradual deepening of the current new medical reform, so the hospital medical record management has changed greatly; the new management modes are gradually introduced, and the management effects are obviously promoted. Since January 2011, the hospital was integrated with the fine management mode in the hospital medical record management, and achieved good results within one year. This study is to compare the quality of the medical record management before and after the implementation of the fine management mode, and analyze the application value of the fine management mode.

1. Data and methods

1.1 Basic data

The one-year research from January 2017 to December 2017 after the implementation of the fine management mode is considered as the observation group, and the one-year research from January 2016 to December 2016 before the implementation of the fine management mode is considered as the control group; 1,000 medical record data are randomly selected from the two groups. In the observation group, there are 634 cases of male patients and 366 cases of female patients; the average age of patients is (46.28±16.36) years old. In the 1000 cases of the control group, there are 620 cases of male patients and 380 cases of female patients and the average age of the patients is (47.59±16.14) years old. The number of medical record managers in both groups is 15. There is no significant difference in the data of the two groups ($P>0.05$).

1.2 Method

Before the fine management mode is not implemented in the control group, the management is conducted according to the traditional management mode, and the medical record section receives the medical record into the medical record room according to the department and the time sequence, and the medical personnel shall register and sign in detail when taking and returning the medical records.

The observation group implements the refined management model in the management of medical records. The specific implementation measures are as follows:

1.2.1 Application of Information Technology in Medical Record Management

(1) In view of the management of historical records, in

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order to facilitate the management of medical records, the medical record room needs to carry out information scanning and taking pictures as far as possible. The specific implementation method is: both parties check and sign the number of cases when the cases are taken off the shelves and out of the warehouse. The original documents of the medical record are prescribed, bagged, sorted, split, repaired and pasted with damaged paper; scanning the medical record and taking pictures in volumes, and carrying out finished product data submission; according to the original sequence, stable the sheet of the medical record into a book, bind and restore; after the medical record flows, they are returned, and the two parties shall check and sign the number of medical records. (2) New medical record scanning: for the new medical record, the most important is to focus on the real-time performance, ensure that the new incoming medical record accepts the informatization scanning within 24 hours every day, and the specific work flow is that the staff of the medical record room take back the discharge medical record, finish sorting and sequencing according to the order of the scanning, upload the finished product data to the file server in batches after the medical record is scanned, remove the black edge and the dirty point of the electronic image of the medical record generated by scanning, correct the skew, carry out classification and cataloging; register an unqualified image page, improve the post-complement scan image and complete the interpolation and carry out spot checks on the number of images and the quality of the image in volumes.

1.2.2 Full application of background management system

The hospital fully utilizes the function of the electronic medical record background management system, monitors the writing situation of the medical record of doctors, and feeds back the monitoring situation to the department. In addition, the clinicians are presented with this monitoring modality that allows clinicians to know that they have been supervised by supervisors, helping to improve work efficiency, preventing medical personnel from being lazy and coping with work. At the same time, the background management system can provide real feedback of the daily workload of each clinician, understand the progress and the treatment of the key patients, so as to discover the patients' possible bad conditions at the first time. With the help of the background management system, we can effectively understand the operation situation on the day of the patients, and determine the surgical patients with focus attention through anxiety and depression index scores.

1.2.3 Maintenance supervision through electronic systems

Information is the scientific and refined main performance of medical record management, which is to make the medical personnel know the patients' condition in detail through the data. But if it comes out of the first page of the medical record, the information is meaningless. Therefore, at the first time our hospital clarifies the importance of the medical quality information of the first page of the medical record, and sets up the following measures for the first-page medical record: first, on the basis of the first page of the medical record of the Ministry of Health, design the relevant contents of the quality control of our hospital; secondly, establish the home page of the electronic medical record to realize the automatic collection of the patients' medical record data; thirdly, the center of gravity of the work center of the medical record room is transferred to the information maintenance, supervision and management, and the accuracy of the information coding is ensured; Fourth, with reference to the experience of other hospitals, the quality control attachment page is added, so that the quality control data can reach full coverage.

1.3 Observation index

Quality of medical record management: the quality qualification rate, missing page and missing item of the first page of the medical record of the two groups, the examination result of the medical record managers' function, the satisfaction of the patients and the medical staff on the management of the medical record are compared.

Among them, the function assessment of the medical record managers needs to be carried out daily performance evaluation, theoretical assessment and technical examination. The total score of each item is 100 points, and the qualified score exceeds 60.

There are 50 patients and 1,000 patients in both groups; satisfaction evaluation is carried out by the questionnaire; the evaluation contents include the contents of the medical record management, the methods of medical record management, the responsibility of the medical record management personnel, the attitudes of the medical record management personnel to the patients or medical personnel; the total evaluation score is 100 points. More than 80 is satisfied, less than 60 is dissatisfied, between 60 and 80 is basically satisfied; the satisfaction degree is calculated based on satisfaction rate + basic satisfaction rate.

1.4 Statistical method

The data is analyzed by SPSS22.0, ($\overline{X} \pm s$) is the result of function examination, t test [n(%)] indicates the patients' satisfaction degrees and other medical record management quality index results; X^2 test, $P<0.05$, there are statistical differences.

2. Results

2.1 Management of medical records

After the implementation of the fine management model, the first page quality of the case is significantly higher in the observation group than in the control group. The incidence of missing pages and missing items in the observation group is significantly lower than that in the control group. The comparison has statistical significance, $P < 0.05$. See the following table.

Table.1 Comparison of items of medical record management in both groups[n(%)]

Group	Number of medical records	Quality of the first page of the medical record is qualified	Missing page and missing item of medical record
Observation group	1000	998（99.80）*	1（0.10）*
Control group	1000	869（86.90）	11（1.10）

Note: Compared with the control group, P<0.05.

2.2 Functional Assessment of Medical Record Managers

In the observation group, the daily performance evaluation, theoretical assessment and technical assessment qualification rate of the medical record managers are higher than those in the control group, and there is statistical significance between the control group and the control group (P<0.05). See Table below.

Table.2 Results of functional assessment of medical record managers in two groups[n(%)]

Group	Number of medical records management	The daily performance appraisal is qualified	Theoretical assessment is qualified	Technical assessment is qualified
Observation group	15	14（93.33）	15（100.00）	14（93.33）
Control group	15	10（66.67）	11（73.33）	10（66.67）

2.3 Satisfaction degree of medical staff and patients

The satisfaction degree of medical staff in the observation group is 94%, and the control group is 76%. The satisfaction degree of the patients for the medical record management in the observation group is 98.2%, the control group is 89%, and there is statistical significance in the control group (P<0.05). See Table below.

Table.3 Comparison of satisfaction degree of medical staff and patients for medical record management[n(%)]

Group		Satisfaction	Basic satisfaction	Dissatisfaction	Satisfaction degree
Observation group	Medical staff （n=50）	20（40.00）	27（54.00）	3（6.00）	94.00
	Patients（n=1000）	530（53.00）	452（45.20）	18（1.80）	98.20
Control group	Medical staff （n=50）	17（34.00）	21（42.00）	12（24.00）	76.00
	Patients （n=1000）	470（47.00）	420（42.00）	110（11.00）	89.00

3. Discussion

The medical record is the important carrier of the condition, diagnosis and treatment of the patients. The quality of medical record management in the hospital is directly related to the development quality of the hospital and the harmonious degree of doctor-patient relationship[4]. Through the information data recorded in the medical record, the ward doctor can immediately understand the change of the condition of the patient during the hospitalization and the treatment condition that has been received. At the same time, the medical record can also be the important data of the medical staff's clinical experience summary and important information about the research of some special diseases[5]. In practice, the application of medical record involves a very wide range, including insurance claim, disability identification and medical insurance, so it is very important to manage the patients' medical record management[6].

However, from the current situation, there are some deficiencies in the hospital medical record management; the following points are summarized in detail: first, there is no unified implementation standard to carry out medical record management; most hospitals have insufficient attention in the process of medical record management; the process is disperse; there is lack of strict rules and regulations, and there is lack of a sufficient sense of responsibility for medical record managers; they pay attention only to the completion of tasks according to the hospital regulations; they lack enthusiasm and autonomy in the work; they do not carry out medical record management in strict accordance with the standard ISO medical record management standard, so management errors are easy to appear, and they can not be quickly and effectively processed after the errors occur[7-8]. Second, the different links in the medical record management are not strict; the medical record management includes multiple links, but in fact there is very close relationship between each link; if there is any problem for a link, it will inevitably affect the management quality of the whole medical record[9].

At present, due to the gradual increase of the patients' health consciousness, there is more knowledge about the disease

and medical knowledge, so there is an increasing demand for medical service quality. Thus it is very important to improve the hospital medical record management; the fine management mode implemented by the research optimizes the specific management process, further make the management processize, quantize, standardize and refine; the management mode reduces the medical cost at the maximum extent, reduces the waste of medical resources and reduce the unnecessary loss is reduced[10]. The management pays attention to monitoring the whole medical record management process; when the management handover is performed by different staff members, the registration is completed through the computer; the staff members should perform inventory cleaning on the medical records in the medical record room regularly and set an error alarm system; when an error occurs, the system can prompt the alarm, so the error can be modified in time and then the serious consequences can be avoided. From the results of this study, the quality qualification rate of the first page of the medical record after the fine management mode of the observation group is higher than that of the control group, and the incidence of missing pages and missing items in the medical record of the observation group is lower than that of the control group; the qualification rate of daily performance evaluation, theoretical assessment and technical assessment for the medical record managers in the observation group are higher than those of the control group; the satisfaction rate of medical staff of the observation group for medical record management was 94%, which is higher than that of control group 76%; the satisfaction rate of the patients for medical record management in the observation group is 98.2%, which is higher than that of the control group 89%, $P<0.05$.

In conclusion, the application effect of the fine management mode in the hospital medical record management is obvious, which can obviously improve the management quality, reduce the error occurrence and be worthy of popularization.

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Villagers Differentiation, Elite Selection and Good Governance of Village: Case Analyse on Village Governance in Zhejiang, China

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Abstract: In the process of modernization, the governance of rural China plays a pivotal role in the political development of the country. At present, the growing differentiation and re-integration between villagers has become the realistic background of village governance in Zhejiang province. The consequence of village governance caused by different political choices among elite groups are significantly different. Seeking good governance in village governance requires not only improving public service capabilities, promoting village integration, but also expanding rural social capital, rallying elite consensus, and deepening the building of democracy and the rule of law, and safeguarding social fairness and justice.

Key words: village governance, villager differentiation, elite selection, public service, social capital, democracy, rule of law

Introduction

Traditional China is a rural country and the quality of rural governance determines the rise and fall of traditional China. In the process of modernization, the state of rural governance still plays a pivotal role in the political development of the country. Huntington believes that "if farmers default and agree with the existing political system, then it provides a stable cornerstone for the political system."[1] For China, Moore believes that in the process of transition from agricultural society to modern industrial society, farmers play a decisive role.[2] Governance, as a theory and practice in the process of modernization, has been integrated into the daily political life of modern society. "Less rule, more governance" is an important appeal of modern political life. At present, China is in a critical period of the modernization process. Promoting the modernization of the national governance system and governance capacity has become the overall goal of China's comprehensive deepening reform. How the level of rural governance will ultimately determine the realization of this goal. Based on the case study of village governance in Zhejiang, the author analyzes the political logic of village integration from the perspective of feelings and interests, and examines the different choices of rural elites under the framework of comparison between opposition and consensus, and then explores the path of village governance seeking good governance, with a view to helping to modernize rural governance.

1. Differentiation and integration: the realistic background of village governance

Social differentiation and integration are the inevitable result of the development of human social productive forces and the basic motivation for the progress and development of human society. With the continuous development of productivity, the refinement of social division of labor has caused a series of social differentiation. At the same time, social integration has gradually developed to eliminate the disorder and conflict caused by social differentiation, thus realizing the development and harmony of human society. Classic writers such as Marx, Parsons, and Luhmann believe that social development is advancing in the continuous integration of differentiation and integration. After the integration of society, the integration and then the new differentiation, and finally through the new differentiation and moving towards new integration, society can truly complete a level or stage of development. [3]In China, since the reform and opening up, with the development of the market economy and the advancement of rural reforms, the governance environment of rural society has undergone profound changes, especially in the rural areas of Zhejiang, where the market economy is well developed. The growing differentiation and re-integration among villagers has become the reality background of village governance.

1.1 Diversity and openness: type characteristics of villager differentiation

For the study of social differentiation, traditional theory can be divided into two university schools: one is the Marxist school, which advocates the division of members according to people's

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possession of the means of production; the second is the Weber school, which advocates the use of multiple indicator systems to classify members of society. Such as wealth, power, reputation and so on. As a kind of social differentiation, peasant differentiation generally refers to the differentiation of occupation, income, idea, power, prestige, consumption, etc. under the conditions of socialist market economy, and presents diversity. At the same time, the current peasant differentiation remains, but in the process of continuous evolution and showing openness.

1.1.1 Multiple types of villager differentiation

The occupational differentiation of the villagers: With the advancement of industrialization and urbanization, the proportion of traditional farmers who are “sunrise and sunset” in rural society is decreasing. More and more villagers are employed in the secondary and tertiary industries. Lu Xueyi, who had a great influence on the occupational stratification of farmers in the early stage, believes that Chinese farmers can be divided into nine levels of occupations including agricultural labor class, migrant worker class, employee class, rural intellectual class, individual laborer, individual industrial, commercial class, private entrepreneur class, township enterprise management and rural management. [5] According to the survey of Y villages, in the occupational situation of more than 1,200 laborers aged between 18 and 60, there are 10 village cadres engaged in rural management, and 443 and 7 villagers engaged in planting and aquaculture respectively. There are 206 villagers in the manufacturing industry. There are 50 villagers engaged in construction projects such as contracting, woodworking, electrician and mason. There are 30 villagers engaged in accommodation, catering and tourism, and 25 villagers engaged in business, wholesale and retail. There are 1 villager engaged in science, education, culture and health, and about 150 villagers doing manual work at home. In addition, there are more than 300 villagers working in fixed positions. The situation in Y village shows that the villagers' occupations are distributed in the three major industries, but they are mainly concentrated in the primary industry and the secondary industry, and most of the villagers are difficult to break away from the connection with the rural areas, and the degree of occupational differentiation of the villagers has room for further expansion.

1.1.2 The income of the villagers is divided

In modern society, personal income is closely related to occupation. With the non-agriculturalization and diversification of rural residents' occupations, the income of farmers will inevitably divide. According to the 2016 Zhejiang Statistical Yearbook, the current per capita disposable income of rural residents in Zhejiang is 19,373 yuan, the lowest 20% is 5,682 yuan, the lower 20% is 13099 yuan, and the middle 20% is 18,305 yuan, the higher 20 % households are 23,973 yuan, and the highest 20% households are 36,335 yuan. If the average population of Zhejiang in the sixth census is 2.62 and the proportion of the labor force of 18-60 years old is 63.9%, the annual income of the lowest 20% of households should be 9671 yuan, and the lower 20% of households should have an annual income per labor. For the 23,681 yuan, the annual income of the 20% of the households should be 32,360 yuan per year. The higher 20% of the households should have an annual income of 40,840 yuan per employee, and the highest annual income of 20% of the labor should be 58,390 yuan. According to this statistics, the annual income per rural labor force can be roughly divided into 23,000 yuan and below for the lower layer, 23001 to 32,000 yuan for the middle and lower layers, 32001 to 40,000 yuan for the middle layer, 40001 to 58,000 yuan for the middle and upper layers, and 58,000 or more for the upper layer. Judging from the survey of Y village, in addition to part-time income, there are 915 people with an annual income of 23,000 yuan and below, and 210 people between 23,001 and 32,000 yuan. There are 91 between 32001 and 40,000 yuan. There are 34 people between 40001 and 58,000 yuan, and 17 people at 58,000 yuan and above. This shows that the income level of villagers in Y village has a low pyramid structure. Although it begins to differentiate, the degree of differentiation is low. The income level of most villagers is in the lower or lower middle layer. However, the annual income of upper income earners has been six times more than the lower income earners, the first rich class has risen, and the income gap between the classes has begun to widen.

1.1.3 Villager's values differentiation

Marx believes that "the production mode of material life restricts the whole process of social life, political life and spiritual life." [6] At present, the rural areas of Zhejiang are in a critical period of social transformation. The production methods of traditional society, modern society and post-modern society exist differently, which determines that the values and spiritual life of Zhejiang farmers are bound to be multi-differentiated. In traditional China, the mode of production of the natural economy determines the values of Confucian ideology leading the peasants; after the founding of the new China, with the establishment of the socialist system, socialist ideology has become the dominant force shaping the values of peasants; with the development of the market economy, capitalist ideology once again affects the values of farmers. At the same time, with the continuous development of Zhejiang's rural economy and the improvement of farmers' living standards, the values of postmodernism have gradually emerged among the rural youth groups in Zhejiang. Inglehart believes that as long as the economic growth is long enough, the younger group gets a higher economic security than the older group in its growth stage,

and the postmodernist values will rise from it. “In the political arena, the rise of postmodern values has led to a decline in respect for authority, and an increasing emphasis on participation and self-expression. These two trends have spawned democratization and are more participatory and issue-oriented democracy." [7] This shows that under the influence of various production methods and ideologies, the values of Zhejiang farmers are increasingly diverse and complex, and they pose challenges to the traditional village management methods of village elites.

1.2 Feelings and benefits: political logic of village integration

Social differentiation and integration is the life spiral of social development. However, compared with social differentiation with natural dynamics, social integration requires the objective foundation and subjective initiative of human society. Early sociologist Frank Ward said: "The history of human differentiation has been almost 150,000 years, and integration has been almost 50,000 years. [8] In modern society, with the rise of the industrial revolution and the information revolution, social differentiation has accelerated, social order has been continuously affected, and social integration has become an important guarantee for the stable development of society. For the current reality of rural differentiation in Zhejiang, how to integrate villagers' participation in village governance in an orderly manner has become the basic variable for achieving good governance in rural areas.

1.2.1 Emotion-led social integration

The economic foundation of traditional Chinese rural society is the natural economy dominated by the small-scale peasant economy and the family handicraft industry. According to Marx, "this mode of production is based on the premise of land and its production dispersion. It excludes the accumulation of production materials, excludes collaboration, excludes the division of labor within the same production process, excludes society's domination and domination of nature, and rejects free development of social productivity." [9] This leads to the fact that the interaction between people is difficult to produce a group structure based on division of labor and cooperation, social production is maintained at the low end level, and social interaction can only stay in the bloodline based on clan and in-laws, and the geography based on neighborhood relations. The relationship between the primary groups based on the inheritance of mentoring and apprenticeship and the academic foundation based on the discipline, the relationship between the relationship becomes the basic norm of social integration. Fei Xiaotong believes that the traditional Chinese people interaction is a pattern of difference. In the differential pattern, everyone forms a network centered on themselves. It is like throwing a stone into the lake, centering on this stone (personal), forming a circle of ripples around the ripples. The distance can indicate the closeness of social relations.[10] In other words, the interaction between people is like a concentric circle with oneself as the center. The people with the deepest feelings are closest to themselves (such as family and relatives), and those with emotional acquaintances (such as friends and neighbors). Others who have no relationships are at the outermost level (such as non-communicating and strangers), and social integration revolves around the relationship of feelings. After the founding of New China, this kind of emotional-led social integration was once suppressed by the state power. However, after the reform and opening up, with the implementation of the household contract responsibility system and the implementation of village self-government, the traditional way of social interaction in rural areas has revival and emotional-led integration has once again become an important way of social integration in rural areas and an important variable affecting the level of village governance.

1.2.2 Interest-led social integration

Marxism believes that the interest factor is of fundamental significance to the political life of human society. "Everything people strive for is related to their interests." [11] However, in a long historical period, interest factors have been artificially suppressed in our political life. Since the reform and opening up, with the development of China's market economy and the advancement of rural reforms, the rural production and life style has undergone major changes, and the political life of the people has gradually returned to normal, and interest linkages have become the dominant factor in social integration in rural areas. On the one hand, the self-sufficient natural economy is no longer the main mode of production in rural areas. More and more farmers are entering the secondary and tertiary industries, and the traditional primary groups are linked by blood, geography, business, and academic ties. Constantly disintegrating, the emotional circle of warmth and veins is difficult to maintain; on the other hand, the rural social differentiation has expanded and expanded, and the secularization and rationalization of farmers have gradually surpassed the obscurity of traditional society and the dogma of Confucian morality. The acquisition of interests has become determining factor of a social action of people. In the context of the current construction of new rural areas, the resources required for village governance are increasingly enriched, and the first rich groups have reached the stage of village self-government on a large scale by virtue of their economic strength. In this process, the first rich group not only seeks the support of the villagers through the cooperation of the office, the provision of employment opportunities, the use of property purchases, but also the support of government resources, the disposal of collective assets, and the construction of public works. The first rich characters - key supporters - the general

supporters formed a non-institutional interest group. It can be said that the integration of interests led by the richest people has become a key variable in the governance of many Zhejiang villages.

2. Opposition and Consensus: Different Choices of Village Elites

Since the reform and opening up, the realistic background of rural governance in Zhejiang is generally similar. The type characteristics of villager differentiation and the political logic of villager integration show strong commonality. However, the level of governance between different villages is quite different. Lipset believes that "a success or failure of democracy will continue to depend on the choices, actions and decisions of political leaders and leading groups." [12] For village governance, the results of different political choices between elite groups are significantly different. If elite groups choose to oppose each other, village governance often faces factional struggles, and even a vicious confrontation between different groups, villagers' autonomy is in trouble; if elite groups reach consensus, village governance can often unite and cooperate, village mobilization ability will be strong, and villagers autonomy is very vibrant.

2.1 Opposition: the factional struggle between the village elites [13]

X Village is located in the eastern part of City A, with a registered population of 2,340, of which about 90% of the villagers are from families whose surname is Wu. Before the reform and opening up, the social integration of X Village was mainly the integration of clan and the integration of political parties. However, whether it is the patriarch or the village party secretary, the village authorities have the same identity. After the reform and opening up, with the deepening of the social differentiation of X Village, interest has become the dominant way of social integration. In the process of integration, the village authorities gradually dispersed in different elite groups, and the struggle between the elites around interests and authority gradually evolved into factional struggles. In the past few years, due to the mutual struggle between the village elites, the public utilities in X Village have been difficult to develop, and village governance is in a state of opposition and stagnation.

2.2 Consensus: Solidarity and cooperation among village elites

Y Village is located at the source of the main drinking water source in B City, with a registered population of 1,695. Mr He, the current secretary of the Party branch of the village, has been enthusiastic about the public welfare undertakings in the village since his returning home. In 1982, at the age of 25, he was elected as the secretary of the village party branch. He has worked in the countryside for more than 30 years and has gone from the "young secretary" to the "old secretary." Over the past 30 years, he has led the two committees of the village to unite and work together and become a well-known harmonious village. In the 1990s, in order to solve the crisis of cadre trust caused by unclear financial problems in the village, it was creatively proposed that each production group should launch a villager with a high prestige of the masses, and take turns to manage the village accounts as cashiers. In 2005, a village financial management supervision team consisting of 12 villagers, two members of the village, and retired veteran comrades was set up. The village representatives elected four more prestigious personnel in the village to act as cashiers. The rotation, the clean-up of the finance quarter, and the openness of the village affairs one quarter, promoted the understanding and trust between the cadres while ensuring the openness and transparency of the village-level financial management. The third is to require cadres to lead by example and enhance the sense of identity of the villagers. In recent years, with the improvement of the living standards of rural families, the demand of the majority of villagers for public utilities in the village is increasing.

3. Seeking good governance: the path choice of village governance

At all times and in all over the world, seeking good governance is the ideal model for the public life of human society. Aristotle believes that "the city-state is composed of a number of good families or tribes in order to pursue self-sufficiency and a good life." [14] Yu Keping, who studied the theory of good governance in China, believes that good governance is a social management process that maximizes public interests. Its essence is the joint management of public life by the government and citizens, and the good cooperation between the state and society. [15] For the current village governance in Zhejiang, the differentiation and integration of villagers has become the realistic background of village governance, and the different choices of village elites will largely determine the quality of village governance. Seeking good governance requires not only improving public service capabilities, promoting village integration, but also expanding rural social capital, rallying elite consensus, and deepening the building of democracy and the rule of law, and safeguarding social fairness and justice.

3.1 Improve public service capabilities, promote village integration, and lay the foundation for good governance in the village

At present, the social differentiation and integration of rural areas in Zhejiang are profoundly carried out, and the socio-economic differences between villagers are becoming

increasingly apparent. Dahl believes that social and economic differences between different social groups often encourage mutual unity within the same group and conflict between different groups. [16] In the process of modernization, if most members of society are unable to share the fruits of economic and social development, it is difficult to change at the bottom of society, and a small number of powerful classes have a large amount of personal wealth and social resources. In the long run, it will inevitably lead to division and confrontation between social groups. As Huntington believes, the process of modernization tends to breed instability, while the high degree of modernity breeds stability. [17] In this regard, we must gradually improve the public service capacity in rural areas, ensure that rural vulnerable groups share social development results, and promote integration among villagers.

3.1.1 Expand rural social capital, unite elite consensus, and strengthen the dynamic support of good governance in the village

In the political life of human society, the factional struggle between the elites is inevitable, and the party's same-cutting will never stop. Hamilton and others believe that "the reasons for party struggle cannot be ruled out, and only by controlling the results then the results can we solve it." [18] However, for democratic politics, competition between elites is necessary, but it must be moderate. "Democracy needs conflict, but not too much; competition is necessary, but it must be within the scope of strict limits and unanimous acceptance. Disagreements must be controlled through consensus." [19] For the democratic politics in rural Zhejiang, the situation faced by village governance is often more than competitive conflicts and insufficient consensus, resulting in the failure or even embarrassment of democratic institutions. Through 20 years of empirical research on Italy, Putnam believes that social capital is a key factor in the effective operation of the Italian democratic mechanism, and gradually brings Italian society to prosperity and good governance. "In a community with a large stock of social capital, life is more comfortable. The network of citizen participation fosters a solid guideline for general communication and promotes the generation of social trust. This network facilitates coordination and communication, and expands its reputation. It is also conducive to solving the dilemma of collective action." [20] For village governance with a deep emotional connection, the cultivation of social capital is undoubtedly crucial for village governance and a reliable basis for rallying elite consensus.

In a community community, the closer a citizen participation network is, the more likely people are to achieve cooperation for the common good. For village governance, there are two main ways to expand citizen participation networks: First, strengthen the construction of rural social organizations. Since the reform and opening up, rural social organizations mainly include grassroots party organizations, village self-governing organizations, rural economic organizations, group organizations, and service social organizations. However, in addition to the establishment of a relatively complete operational mechanism by grassroots party organizations, village self-governing organizations, and rural economic organizations, a large number of group organizations and service social organizations are still unable to effectively attract the majority of villagers to carry out daily activities, and the participation of villagers is also Quite a large expansion space. The second is to focus on guiding rural informal organization activities. In rural areas, many informal organizations have been formed due to factors such as blood, geography, business, academic, and fate. Under the current reorganization of rural society, these informal organizations are of great significance for villagers to participate in village governance. However, For informal organizations, they must be guided to a "horizontal"-based participating network. "Vertical networks, no matter how intensive, no matter how important they are to their participants, cannot maintain social trust and cooperation." "The horizontal civic engagement network helps participants resolve the dilemma of collective action." [21]

3.1.2 Deepen the building of democracy and the rule of law, safeguard fairness and justice, and improve the guarantee mechanism for good governance in villages

Human being is a spiritual higher animal, which pursues the private enjoyment of the individual and the public life of the group. Aristotle believes that mankind is naturally an animal that tends to live in a city-state. Anyone who is isolated from the city-state, if he is not a beast, is a god. [22] For the governance of villages seeking good governance, not only the effective supply of public services and the harmonious expansion of social capital, but also a fair and just public life is needed. It can be said that fair and just public life is the fundamental guarantee for the realization of good governance in human society and the inherent requirement of socialism with Chinese characteristics. Judging from the experience of human political practice, the public life of fairness and justice cannot be separated from the construction of democracy and the rule of law. Without democracy, it is difficult to achieve effective expression of the will and interests of the broad masses of people; without the rule of law, the will and interests of the broad masses of the people will not be effectively guaranteed, and the fairness and justice of society will naturally not be realized.

a. Deepen the construction of rural democracy

As a concept, democracy has become a widely recognized political value in modern society. Almost all countries in the world claim to be democratic countries. "After thousands of years of change, democracy has finally won world-wide discourse hegemony today." [23] However, as a political practice,

democracy has a far-reaching degree of development in countries around the world. Even for countries with higher levels of democratic development, they have their own problems. Judging from the reality of village governance in Zhejiang, there is no doubt that there is still room for expansion in the development of grassroots democracy.

(a) Further improve rural electoral democracy. First, we must carefully improve the open election mechanism in accordance with the law. Professor Wu Jialin, a famous constitutional scholar, once pointed out: "There is no election for the difference, not the real election; the difference in not running the election is not the real difference election."[24]

At present, in the election of the two committees of Zhejiang Village, although there is a certain open competition mechanism for competition among candidates, more competition is the secret mobilization of the audience, and even money transactions, rumors, threats, threats, and violence It has seriously affected the healthy development of rural electoral democracy. To this end, the cautious improvement of the open campaign mechanism in accordance with the law should be an important measure to achieve benevolent and democratic competition. The second is to regulate the expression of the interests of the powerful class. Election democracy can also be called a vote-based democracy. The "minority obeys the majority" is the basic principle of its operation. However, in practice, electoral democracy often evolves into a “winner-take-all”, and the interests of a few people are difficult to maintain effectively. In the village governance in Zhejiang, after the election victory, some powerful classes often pay attention to the interests sharing of the members of the circle, but they do not care about the interests of the ordinary villagers, and even use the powers of the village cadres to retaliate against the competitors and take advantage of them. This requires the grassroots government to take effective measures to protect the legitimate and legitimate interests of the villagers, to suppress the improper interests of the rural strong class, and to maintain the fairness and justice of village governance.

(b) Vigorously develop grassroots deliberative democracy. Deliberative democracy is a process of extensive discussion and consultation between the government, political parties, citizens, enterprises, and various social groups. It can absorb various opinions, different interests, different emotional concerns, and make the parties understand each other during the consultation. The position, viewpoints and related reasons, under the premise of maximizing the public interest, reach a consensus that all parties can accept. The report of the 18th National Congress of the Communist Party of China requires the promotion of broad, multi-layered and institutionalized development of deliberative democracy. First, we must build a platform for grassroots consultation and democracy implementation, and broaden the channels for people to participate in democratic consultations. [25]

3.2 Solidly promote the rule of law in rural areas

The law is the heaviest weapon of the country, and the good law is raised before good governance. The so-called rule of law is the rule of good law. More than two thousand years ago, Aristotle pointed out: "The rule of law should have two meanings: the established law is universally obeyed, and the law that everyone obeys should itself be a well-developed law." [26] In modern society, the rule of law is a norm of behavior accepted by people across the racial, ethnic, regional, class, belief, occupation and other differences. It has become the most reliable way to protect citizens' rights, resolve conflicts of interest, and maintain social stability. It provide fundamental guarantee of social fairness and justice.

3.2.1 Make sure that good law is generated

Good law is the basic requirement of the rule of law, and its fundamental lies in the people's nature of legislation. "The main sign of the rule of law is not whether there is a law, how much the law... but whether the law is formulated by the people and whether it actually reflects and safeguards the interests and will of the people." [27] This requires that the formulation of the law must regard the fundamental interests of the overwhelming majority of the people as the starting point and the foothold of the legislation, and be reviewed by the legislature representing the public opinion to ensure that the interests and will of the people are realized. Therefore, the formulation of the law requires the participation of the people as much as possible in the legislation, soliciting opinions from the society and realizing democratic legislation. For village governance, village regulations are an important part of good law. The formulation and revision must be discussed and approved by the villagers' assembly, and the basic political, economic, social and cultural rights of the villagers must not be harmed.

3.2.2 Maintain legal authority

The life of law lies in its practice. "There is no country that can't be done in the world without law." [28] This shows that the authority of the law comes from the implementation of the law, from the protection of citizens' individual rights and freedoms by law, and whether the law enjoys authority is the basic yardstick for judging the construction of a country's rule of law. First, the law is higher than power. In state and social activities, the law is in the highest position, all power must be exercised under the law, and no organization or individual has the privilege of transcending the law, and the exercise of power must be based on the law and in accordance with the law. Second, the rights and freedoms of citizens are effectively protected by law. The public's recognition of the law comes from life experience and social observation. When the rights and freedoms of citizens are infringed by power and others, the law can provide relief. The

public will feel that the law is a reliable guarantee for the legitimate rights and interests of individuals. The people will choose the law as a weapon to protect their rights and interests, and the legal authority will thrive.

3.2.3 Establishing belief in the rule of law

Rousseau once pointed out: "The most important law in all laws is not engraved on the marble, nor inscribed on the bronze watch, but inscribed in the heart of the citizen. It forms the true constitution of the country, which is obtained every day. New power, when other laws age or die, it can maintain the spirit of a nation."[29]Solidly promoting the construction of the rule of law in rural areas is fundamentally to establish the peasants' belief in the rule of law. Only when the belief in the rule of law is deeply engraved into the hearts of the peasants and become the daily lifestyle of the peasants, will the rule of law society really come. To this end, let the peasants feel the fairness and justice of the rule of law society in every judicial case, cultivate the peasants' law-abiding emotions in the social atmosphere of obeying the law, advocating the law, and safeguarding the legal authority. For a long time, the rule of law will be silently planted. The daily life and behavior habits of the peasants are like the omnipresent air, which can't be seen or touched, but it plays a role at every moment.

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The Business Accounting and Comparison of the Forest Social Benefits

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Abstract: Besides ecology and economic benefits, forests provide the important social value, too. The paper has accounted some social values such as employment value, recreation value, cultural value and so on. The career touching on forest culture has big development potential that should be invested more human resources in related industries. The number of people who travel to forests is rising every year, so that the recreation value of forests is received more and more attention. Forest employment benefits do not compare with forest cultural value and recreation value. For excavating the job opportunity of forests, the thinking of development should be changed.

Key words: forests, social value; employment value; recreation value; cultural value

1. Introduction: Consensus on the Content of Forest Social Benefits

[U.S.] Elers Kock(1998) thinks that the social benefits of forests include the values of forest culture, history and archaeology, the aesthetic and landscape values of forests; the value of landscape; the religious values of forests, the values of forest tourism and appreciation services[1] . [U.S.] Myrick Freeman III (2002) argues that the forest is "a typical resource——environment composite system, which offers a wide range of services ranging from materials such as wood, fiber, to natural landscape, hiking, wildlife viewing, etc., from defense against water flow and control of soil erosion to the absorption of carbon monoxide in the air.The forest is also beneficial for the life and support the improvement of the system."[2] [UK.] Roger Perman et al. (2002) believes that many outputs of forests do not realize their value in market exchange, with external economics, and only wood products realize their values through the market; external benefits of multiple benefits of forests include forest benefits.[3]

Liu Guangquan et al (1997), regards labor productivity, labor productivity utilization rate, product commodity rate, living standard improvement and stability unity and other conditions created by reform and opening up as the content of forest social benefit evaluation[4]. Zhang Hongjian (1998), regards the employment of forestry as a forestry's contributions to sustainable development[5]. Zhang Jianguo and Zhou Xiaofeng (1999) believe that the social benefits of forest include the improvement of human physical and mental health, social structure and spiritual civilization, and are listed into economic benefits and ecological benefits[6]. Su Juan and Lan Shengfang (2000) believe that forest social benefits include recreation and appreciation, increased employment, social stability, import substitution, etc[7]. Zhang Zurong (2001) believe that forests have social benefits such as environmental beautification, health care, carbon sequestration, increased employment, optimization of industrial structure, increased labour productivity and promotion of civilization progress[8]. Zhang Jing (2001) holds that the social benefits of forests are the function of social services such as recreation, health care, scenery, convalescence, cultural recreation and so on for human beings[9]. The social benefits of forests represent landscape and recreational value, scientific cultural value, disaster prevention and disaster reduction value, defense value, employment creation, economic development environment, beneficial health, etc. (Ma Guoqing, etc., 2002).[10] The social benefits of forest resources is the function of forest to human survival and development; the contents include the human survival development of the forest to the subject and the influence of the object of the development of the main body; forest social benefits are the direct, indirect or hidden function and roles of forests, acting on people, thus bringing about the benefits of the change of various living factors, including the progress of human health, the change of mental state and the improvement of social relations, etc. (Yuan Lin, etc., 2003).[11] Zhang Ying (2007) believes that the social benefits of forests are a comparative relationship of some kind of consequences arising from the consumption of forest products or services in common economic activities based on forest resources, and its benefits include: the growth and perfection of the forest's physique, the development and perfection of human

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labor, feeling and thinking, the social equity, social cohesion and social participation created by forests, the religion, culture, customs, tradition, knowledge and so on related to forests.[12] Yue Shangzhi (2008), summarizes the social benefits of forests as the benefits of social civilization process, including education and art related to forests, religion and culture, sports and entertainment, social equity and social security, social participation and social cohesion; the benefits of human health include recuperating and health-care recreation, improving the physique and improving the immunity; the benefits of social life include environmental beautification, disaster prevention and reduction, labor and employment, industrial restructuring and increased labor productivity.[13] Xu Rui et al. (2009) believes that the forest social benefits refer to the satisfaction of the demand and the realization of benefits in the interaction between the subject people and the forest, among which the demand and benefits reflect the connotation of forest social benefits, covering the functions of forest culture (population literacy, scientific and technological level, labor productivity), forest health (population life, convalescence and disease prevention), improving livelihood (employment, income level, social security, living conditions), etc.[14]

According to the above study, from the early1990s to nowadays, lasting for 20 years, the basic consensus emerged from both the theory circle of forestry and the practice circle of China and abroad is that the forest, as the largest terrestrial ecosystem on earth, has the ecological values of regulating the nature air and water cycle, etc, provides the economic value of human production and living resources, improves the human health, the living environment and fosters the social value of human civilization. There is no strict distinction between the three great benefits of forest and forestry. The social benefits mean the comparison of teh "input" and "output" of human (physical and alive) materialized labor, labor cost and so on such as family or public welfare level, social civilization degree, people's own production (quantity and quality) in the process of social production. Forest social benefits mainly include the employment value of forest, forest recreation value and forest culture value generated by forest (the values of forest science, culture, history and so on), and other contents are still being explored.

2. Accounting for Value of Forest Employment

Table.1 Average annual population and annual gross wage for forestry employees (10,000 yuan/year)

Item		Year 2000	Year 2001	Year 2002	Year 2003	Year 2004	Year 2005
Employees' salary	Actual	288205.1654	299715.0283	308580.1469	307448.5976	305591.0252	313290.271
	Name	1032206.80	1095488.40	1134649.20	1159757.60	1232601.40	1313187.50
GDP deflator		3.5815	3.6551	3.677	3.7722	4.0335	4.1916
Number of employees		192.3661	176.8925	163.406	152.9563	147.6394	143.7839

Table.1 continued Average annual population and annual gross wage for forestry employees (10000 yuan/ year)

Item		Year 2006	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011
Employees' salary	Actual	339260.3	390136.78	378434.74	453437.5	475470.8	499062.68
	Name	1476189.40	1827205.60	2046234.50	2274125.10	2595119.60	2978505.90
GDP deflator		4.3512	4.6835	5.4071	5.0153	5.4580	5.9682
Number of employees		140.2188	136.6375	130.3275	127.4938	128.2493	126.8255

Note: The data come from *China Forestry Statistics Yearbook*. The number of employees, whose unit is 10,000, is the average number of employees in the post; the employees' salary, whose unit is 10,000 yuan, is the total annual average number of the staff on duty. Current GDP deflator = current nominal GDP/ base nominal GDP/ current price index; the current GDP deflator is calculated from 1978. Real GDP = nominal GDP/ deflator.

The value of forest employment, in general, is based on the wage statistics of the on-post staff in the forestry system, and the annual average number of on-post staff is the on-post staff; the total average annual salary of on-post staff is the salary. As can be seen from Table 1, the value of forest employment opportunities, regardless of the actual or the nominal social benefit, is on the rise. However, that value of forest employment shows a downward trend in overall employment.

3. Accounting for Forest Recreation Value

Table.2 Tourism income of forest park (10,000 yuan/ Year) and forest park tourism (10,000) person-times

Item		Year 2000	Year 2001	Year 2002	Year 2003	Year 2004	Year 2005
Tourism income	Actual	36090.6017	77083.72411	100719.6356	111046.6995	171595.0465	200366.8885
	Nominal	129258.49	281748.72	370346.1	418890.36	692128.62	839857.85
GDP deflator		3.5815	3.6551	3.677	3.7722	4.0335	4.1916
Travelling person-time		7182.07	8564.70	11027.28	11577.17	14745.03	17427.19

Table.2 Tourism income of forest park (10,000 yuan/ year) and forest park tourism (10,000) person-times

Item		Year 2006	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011
Tourism income	Actual	271860.1857	337313.7611	346048.8987	450909.2178	540380.5423	630714.9559
	Nominal	1182918.04	1579809	1871121	2261445	2949397	3764233
GDP deflator		4.3512	4.6835	5.4071	5.0153	5.4580	5.9682
Travelling person-time		21321.77	24746.00	27379.00	33287.00	39611.00	46808.00

Note: The data comes from the *China Forestry Statistical Yearbook*. The tourism income of forest park is the ticket, accommodation, entertainment and other four kinds of income of forest park in forest tourism income, and its unit is 10,000 yuan.

The value of forest recreation is generally calculated with the willingness of the forest tourism tourists to pay, and there is no national intention investigation statistics in China's forestry statistical yearbook, and the tourism payment expense of tourists is not continuous for many years. Therefore, the tickets, accommodation, recreation and other four kinds of income in forest tourism income are adopted to replace the pay willingness of forest tourists as the value of forest recreation. It can be seen from Table 2 that the value of forest recreation, regardless of the actual or nominal social benefit and the annual reception tour (10,000) of the forest park, is on the rise.

4. Accounting for Value of Forest Culture

4.1 Accounting Statement

Culture is the process of making a natural person become a social person. The forest culture, in essence, shows the function and role played by the forest in the process of becoming human. The progress of the society not only shows the prosperity of the spiritual civilization but also the promotion of the spiritual civilization: people have more leisure and freedom to engage in cultural recreation, physical training, social tourism and other public welfare activities.

As one of the main content of forest social benefit, the forest cultural value's calculation (the values of forest science, culture, history, etc.), this study adopts the marginal value method, taking the output value of related departments such as science, culture and history of forest as the dependent variable, taking the total annual salary of the average number of employees related to the science, culture and history of forest as an independent variable, building the income function of forest culture, and determines the social benefit of forest culture based on the marginal income of forest culture. When the curve model estimation is carried out, all data is processed with the GDP deflator to form actual output value, real wages, and the result of the model output is the actual value; all the nominal indicators, except from *China Forestry Statistical Yearbook*, are calculated according to the GDP deflator. The personnel's salary and traditional accounting statistics are used as the cost expense of the organization, because the Chinese forestry statistical yearbook does not have the data of human resources input such as education, training, medical treatment and health care of the employees related to the science, culture and history of the forest. This research works with human salary as input to human resources, which is in line with the theory of modern human resource management.

4.2 Accounting Data

Table.3 Forest culture-related industrial output value and staff salaries and forest cultural values (10,000 yuan/ year)

Item		Year 2000	Year 2001	Year 2002	Year 2003	Year 2004	Year 2005
Industry Output value	Actual	98012.25743	105962.6111	171845.7656	233183.8185	312022.809	191003.8625
	Nominal	351030.90	387303.94	631876.88	879616.00	1258544.00	800611.79
1) Information transmission, computer services and software industry		1599.12	1764.36	2878.50	3196.00	6548.00	0.00
2) Scientific research, technical service and geological survey		20256.95	22350.16	36463.74	52448.00	67100.00	192146.83 （78665.00; *113481.83）
3) Management of nature reserves, wildlife		307824.80	339633.24	554103.30	774055.00	＊＊	608464.96

conservation, forest landscape area management, forest park management						1107073.00 Zhang Ying）	（181007.00；38755.00；*388702.96）
4) Education		15905.35	17548.89	28630.59	41802.00	51863.00	0.00
5) Culture, sports and entertainment industry		5444.68	6007.29	9800.75	8115.00	25960.00	0.00
Personnel's salary	Actual	14170.59891	16425.46032	19262.87735	20943.13663	20372.13338	22058.95124
	Nominal	50752.00	60036.70	70829.60	79001.70	82171.00	92462.30
1) Information transmission, computer services and software industry		0	0	0	261.6	102.8	224.6
2) Scientific research, technical service and geological survey		21778.1	25674.7	30528.9	40958.4	45510.9	49979.2
3) Management of nature reserves, wildlife conservation, management of forest landscape areas, management of forest parks		10439.7 （8369.3 +2070.4）	11264.9 （8973.8 +2291.1）	15544.9 （12837.1 +2707.8）	20722 （15083.3 +1758.1 +3880.6）	17748.9 （16371.4 +1377.5）	21458.3 (19640 +1818.3)
4) Education		12087.7	15235.6	16402.8	15642.1	17217.9	19232.7
5) Culture, sports and entertainment industry		6446.5	7861.5	8353	1417.6	1590.5	1567.5
GDP deflator		3.5815	3.6551	3.677	3.7722	4.0335	4.1916
Number of personnel		5.5745	5.1975	5.4144	5.3007	5.0091	5.2099
Actual Marginal Benefit of Forest Culture in the Year		8.926080444	10.73506232	13.5410992	15.53727329	14.8279062	17.02291084
Social benefits of forest culture	Actual	126487.9058	176328.3402	260840.5331	325399.2374	302076.0829	375507.5602
	Nominal	453016.4347	644497.7162	959110.6401	1227471.003	1218423.88	1573977.489

Table.3 continued Forest culture-related industrial output value and staff salaries and forest cultural values (10,000 yuan/ year)

Item		Year 2006	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011
Industrial output value	Actual	205265.44	234538.81	246364.59	349807.59	449043.79	598130.42
	Nominal	893151.00	1098462.50	1332118.00	1754390.00	2450881.00	3569762.00
1) Information transmission, computer services and software industry		0.00	0.00	0.00	0.00	0.00	0.00
2) Forestry professional technical service		213890.00	263631.00	371158.00	466240.00	481646.00	802077.00
3) Forestry ecological service		679261.00 （95795.00；363906.00；219560.00）	834831.50 （121948.00；152552.00；*590331.50）	960960.00	1288150.00	1969235.00	2767685.00
4) Education		0.00	0.00	0.00	0.00	0.00	0.00
5) Culture, sports and entertainment industry		0.00	0.00	0.00	0.00	0.00	0.00
Personnel's salary	Actual	23412.829	26254.724	24711.342	30816.163	31421.491	32468.299
	Nominal	101873.90	122964.00	133616.70	154552.30	171498.50	193777.30
1) Information transmission, computer services and software industry		0	0	0	0	0	0
2) Scientific research, technical service and geological survey		56685.6	71749.8	74275.4	85614.9	95190.6	107385.3
3) Management of nature reserves, wildlife conservation, management of forest landscape areas, management of forest parks		23665.3 (21398.9 +2266.4)	27427.2 (24729.5 +2697.7)	33602.7 (30625.6 +2977.1)	37147.4 (33095.5 +4051.9)	40978.7 (37055.2 +3923.7)	51650.8 (47432.9 +4217.9)

4) Education		21523	23787	25738.6	31790	35329	34741.2
5) Culture, sports and entertainment industry		0	0	0	0	0	0
GDP deflator		4.3512	4.6835	5.4071	5.0153	5.4580	5.9682
Number of personnel		5.2229	4.9403	4.891	5.1285	5.0538	4.806
Actual Marginal Benefit of Forest Culture in the Year		19.01753577	23.99732044	21.14982842	34.85687332	36.62717265	39.90338486
Social and social benefits of forests	Actual	445254.313	630043.0249	522640.6389	1074155.09	1150880.376	1295595.031
	Nominal	1937390.567	2950806.507	2825970.198	5387210.022	6281505.091	7732370.263

Note:

(1) In addition to the description, the data is from the *China Forestry Statistical Yearbook*, where the data is 0 indicating that the statistics have been returned to other items over the years before adding a * as the correction data. ** 1107073.00, is Zhang Ying's data[15].

(2) Industrial output value and employee wages, with a unit of ten thousand yuan. The salary of the employees is the annual average wage of the employees in the post. The number of employees with a unit of 10,000 is the total average number of employees in the post.

(3) In 2005, 4) Education, 5) Culture, sports and entertainment industry, and health, social security and social welfare, changed from the original individual statistics to the total 1.97785 billion yuan of three items; for the elimination of health, social security and social welfare output value (only a separate statistical reference for 2003-2004), firstly, the ratio of the annual account of RMB 383.68 million yuan in 2003 was 0.434593. In 2004, the ratio of the annual account of RMB 558.66 million yuan was 0.41788, and the annual average value was 0.426236. In this way, the value of health, social security and social welfare was RMB 843.0317 million Yuan, and the difference between 197785-84303.17 was 1134.8183 million Yuan.

(4) Since 2006, 4) education, 5) culture, sports and entertainment industry, the output value yearbook is no longer set up and counted. For the sake of consistency with the subsequent statistical caliber, combine the total number 113481.83 of items 4) and 5) of 2005, and the total number 78665.00 of items 1) and 2) of this year as (192146. 83) as a new "2) Forestry professional technical service" item. In 2006, the management of nature reserves (95795.00), forest park management (363906.00), forestry science and technology promotion and intermediary services (219560.00), etc., were merged (679261.00) in the yearbook as new "3) Forestry ecological service" items. In 2005 and 2007, there were no new "3)" in the original yearbook. In 2006 and 2008-2011, the ratio of output value of forestry ecological services in industrial output value related to forest culture constituted a supplement (annual average of 76%).

(5) The GDP deflator of the current period = the nominal GDP of the current period/ the nominal GDP of the base period/ the price index of the current period; the GDP deflator in the current period is calculated in 1978. Actual GDP = nominal GDP/ deflator.

(6) The value of forest culture or the social benefit of forest culture is calculated, and the specific calculation is contained in the text.

4.3 Analysis of Variance Between Curve Fit and Curve Model

The income equation of forest cultural value. According to the data of Table 3, SPSS1.0 software is used to estimate the model curve and analyze the variance based on the value (Y) of the forest culture-related industry as the dependent variable, and the average number of employees (X) of the forest culture-related industry on the post is taken as the independent variable. (if the omitted parts are needed, please contact the author).

Analysis of Variance for Growth Function:

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.906	.822	.804	.235

The independent variable is employees' salary.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.540	1	2.540	46.054	.000
Residual	.551	10	.055		
Total	3.091	11			

The independent variable is employees' salary.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
employees' salary	8.184E-5	.000	.906	6.786	.000
(Constant)	10.440	.292		35.789	.000

The dependent variable is ln (relevant industrial output value).

In the Growth Function, R = 0.906, R Square = 0.822, Adjusted R Square = 0.804, F = 46.054, and other parameters like T=6.786 and 35.789, whose corresponding significant level Sig. =0.000, less than 0.05. Therefore, it is of statistical significance and it shows that it is appropriate and reliable to adopt Growth Function to reflect the value of forest culture.

4.4 Specific calculations of the value of forest culture

The Growth Function is adopted to reflect the income equation of the forest culture value, and the wages of industrial employment employees related to forest culture are made the wage X-differentiation; then the marginal income equation of the forest culture value is obtained.

$$MR = dy/dx = 0.00008184e^{(10.44+0.00008184x)}$$

In 2011, China's forest culture related industrial workers' salary (actual): X_{2011} = 324.68299 million yuan; the (actual) marginal income of China's forest cultural value in 2011 was:

MR_{2011} = 399033.8486 yuan, that is, the annual increase of 1 unit (ten thousand yuan) human resources investment can achieve the forest culture social benefit 399033.8486 yuan. In 2011, new (actual) human resources investment was added, that is, in 2011 (actual) personnel wage = 32468.299 (ten thousand yuan). Therefore, the (actual) social benefit of China's forest culture in 2011 is 39.90338486 * 32468.299 = 1295595.031 (ten thousand yuan), (nominal) social benefit = GDP deflator 5.9682 * (actual) social benefit 1295595.031=7732370.263 (ten thousand yuan). For other years, see Table 3 for data.

From 2000 to 2011 (year 1 to 12 in the horizontal axis respectively), the (actual) marginal income and (nominal) marginal income of Chinese forest cultural value show a rising trend. Trends (vertical axis units: ten thousand yuan) as shown in Figure 1.

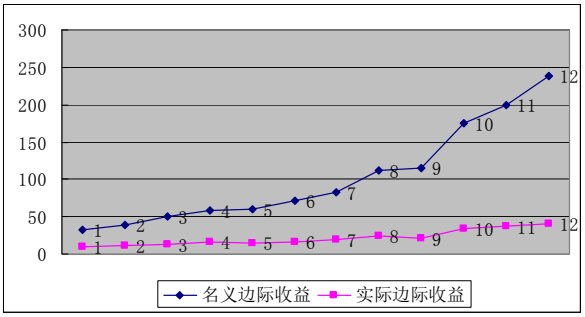


Figure. 1 Change of annual marginal income of Chinese forest cultural value in 2000-2011

From 2000 to 2011 (year 1 to 12 in the horizontal axis respectively), the value of forest culture in China, (actual) income and (nominal) income showed a rising trend. Trends (vertical axis unit: ten thousand yuan) as shown in Fig. 2.

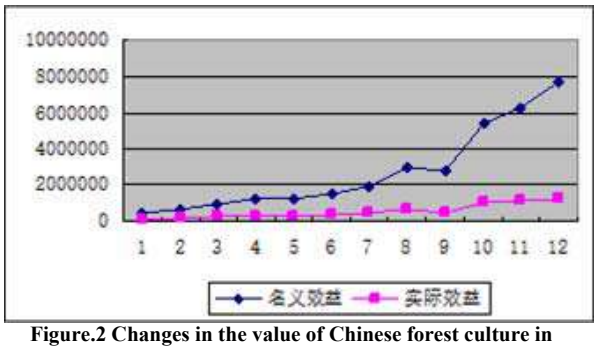


Figure.2 Changes in the value of Chinese forest culture in 2000-2011

5. Comparison and conclusions on the forest socials

The comparison of forest social benefit takes the year 2011 as the example. As shown in Table 4, the (actual) social benefit of Chinese forest culture in 2011 is 12.95595031 billion yuan; the (actual) social benefit of providing employment opportunities for forests is 4.9906268 billion yuan; the recreational (actual) social benefit provided by forests is 6.307149558 billion yuan. Taking the (actual) social benefit as the reference, it shall be constituted as shown in Fig.3.

For the forest benefit composition, the value of forest culture was the largest in 2011, accounting for 53.41839% of the total social benefit; the value of forest recreation is the second, accounting for 26.0048678% of the total social benefit; the benefits of forest employment value occupy the third place, accounting for 20.5767422% of the total social benefit. Changes of forest social benefits of the three items are shown in Table 4 and Figure 4.

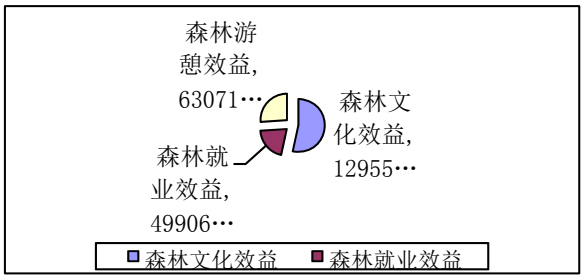


Figure. 3 Composition of (actual) forest social benefit in 2011 (unit: 10,000 yuan)

5.1 Large development potential space of forest culture

The marginal income invested is an increase in the revenue generated by a production element. As to the cause of forest culture, the production factors like human resources have more input space. If the input is continued, the marginal income of the annual social benefit may decline (of course, from 2000 to 2011, not only it didn't decline but also it showed the rising trend as a whole; as shown in Figure 1); but the total amount of social benefits generated by the forest culture increases. In addition,

marginal income = income-change cost, i.e., marginal income is the difference between income and change cost. Human resources expenditure is a main part of the change cost; the marginal income of forest cultural value is large, and the cause of forest culture needs to be further developed; its development potential space is large, and more input should be made to human resources of forest culture-related industry.

5.2 Magnification of forest recreation social benefits shows people's transition to forest demand

In 2010, the social benefits of forest recreation was 5.403805 billion yuan; since then it exceeded the annual forest employment social benefit 4.75471 billion yuan. On the one hand, the development of economy and society gives people more ability to pay, and people can enjoy the physical and psychological pleasure of forest tourism; on the one hand, it is possible to bring the forest recreation demands due to the release of life pressure brought by the social transformation. The enthusiasm of people returning to nature, close to nature and exploring the natural is rising and is more intense; the number of people who travel in the forest has climbed year by year.

5.3 To excavate forestry employment opportunities needs to create forestry development ideas

As shown in Figure 4, between 2000 and 2009, the value of forest employment remained higher than the value of forest recreation, which was higher than the value of forest culture in 2002 and before. However, the value of forest employment was surpassed by the value of forest culture in 2005 and was surpassed in 2010 by the value of forest recreation. Although the value of forest employment shows upward trend as a whole, the rising range is not as large as the value of forest recreation, of course is far inferior to the value of forest culture. Forestry (including first, second, and third industries) has a downward trend in the number of people employed on the post. If we ant to further excavate the social benefit of forestry to provide employment opportunities, it is necessary to change the forestry development ideas.

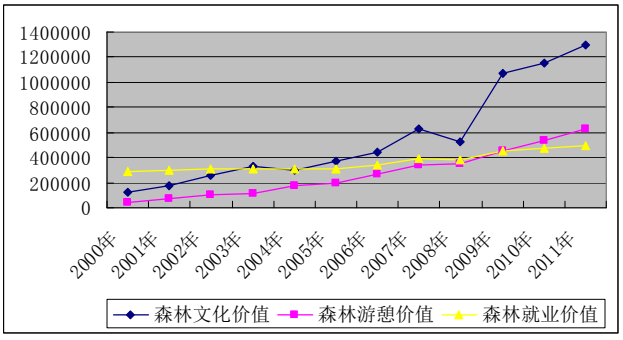
Table.4 Changes in forest social benefits of the three items in 2000-2011

Actual social benefit	Year 2000	Year 2001	Year 2002	Year 2003	Year 2004	Year 2005
Value of forest culture	126487.9	176328.3	260840.5	325399.2	302076.1	375507.5602
Value of forest recreation	36090.6	77083.72	100719.6	111046.7	171595	200366.9
Value of forest employment	288205	299715	308580	307449	305591	313290

Table.4 continued: Changes in forest social benefits of the three items in 2000-2011

Actual social benefit	Year 2006	Year 2007	Year 2008	Year 2009	Year 2010	Year 2011
Value of forest culture	445254.313	630043	522640.6	1074155	1150880	1295595
Value of forest recreation	271860.2	337313.8	346048.9	450909.2	540380.5	630715
Value of forest employment	339260	390137	378435	453438	475471	499063

Figure.4 Changes in the forest social benefits in 2000-2011



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Nursing Research Progress of Ventilator-Associated Pneumonia in Respiratory Care Unit

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Abstract: The respiratory care unit is the high incidence area of Ventilator-Associated Pneumonia (VAP) and the harm of this complication is self-evident. In order to improve the quality of life of patients in respiratory care unit and shorten the treatment period, the author analyzes the bad factors that induce Ventilator-Associated Pneumonia and summaries the preventive nursing measures by consulting the related literature and combining the experience of nursing, hoping to bring some enlightenment to the colleagues in hospital.

Key words: Respiratory Care Unit, Ventilator-Associated Pneumonia, Care, Progress

Introduction

The patients in respiratory care unit are in critical condition and have the symptoms of respiratory disorders. The patients should be treated by ventilator for a long time. However, the risk of Ventilator-Associated Pneumonia is very high in patients during hospitalization, which is affected by many factors such as closed environment, drug action, physical quality of patients, respiratory tract injury and so on.[1]. The occurrence of Ventilator-Associated Pneumonia not only affects the therapeutic effect of the primary disease, but also increases the opportunity of ventilator therapy to a certain extent, increases the economic burden of the patient, and may even lead to the death of the seriously ill[2]. Based on this, this paper summarizes the risk factors of Ventilator-Associated Pneumonia and the preventive nursing countermeasures in the patients in respiratory care unit, as follows.

1. Risk Factors Analysis of Ventilator-Associated Pneumonia Induced by Respiratory Care Unit

1.1 Environmental Factor

Respiratory care unit is airtight, and air is not available. The exhaled gases, secretions and excrement of the patient contain a large number of pathogenic bacteria, It is easy to pollute indoor air. Patients need to take sputum repeatedly during treatment, which is closely related to the occurrence of Ventilator-Associated Pneumonia.[3].In addition, hygiene-unqualified hands of health care workers, improper sterilization and repeated use of medical equipment may induce Ventilator-Associated Pneumonia.

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1.2 Patients' Own Factors

Patients have many respiratory complications and are poor resistance to pathogens. Especially the old age patient physical quality is poor, the body organ function declines gradually, even some patients have organ function failure (age factor), once contact pathogen, can produce inflammation reaction, cause pneumonia.

1.3 Drug Factor

Antibiotics are commonly used in clinical prevention and treatment of bacterial infection, but they must be used reasonably, otherwise overusing will increase the drug resistance of bacteria. Some scholars point out that[4], the cause of antibiotic-induced Ventilator-Associated Pneumonia is that extensive use of antibiotics can damage the oral and pharyngeal microenvironment, It can destroy the colony which is good for human health, and at the same time, it can make the pathogen colony with high variability to produce resistance. The use of sedatives can also lead to Ventilator - Associated Pneumonia, which can inhibit reflexive movements, such as swallowing, coughing, etc., and make it difficult for patients to excrete their own secretions and multiply the risk of infection.

1.4 Respiratory Ventilation Factor

When artificial respiration is created in a respiratory care unit, tracheotomy is generally required, which may impair the defense function of the upper respiratory tract and airway mucosa to a certain extent. At the same time, it also impairs the function of cilia cleaning, and creates good conditions for the infection of pathogenic bacteria[5]. The patients inhale the pathogen through the nasal cavity, which was implanted in the respiratory tract and spread to the lungs, eventually causing a lung infection. In addition, the

ventilator treatment will cause the patient's respiratory tract to become dry, resulting in the sputum is difficult to be discharged in time. Or when giving patients the treatment of atomization, the respiratory tract is not cleaned up, the accumulation of a large number of gas solutions containing bacteria in the respiratory tract will deposit into the pulmonary capillaries and alveoli, which will lead to pneumonia. Furthermore, the ventilator heating is the ideal environment for bacterial growth and reproduction, long-term ventilation treatment will cause bacterial growth[6] . The condensed water in the ventilator flows into the nasal cavity, blocking the nasal cavity or causing sinusitis, and if the patient inhales the infection secretion into the lower respiratory tract, it causes Ventilator-Associated Pneumonia.

1.5 Gastric Tube Indwelling Factor

Bacterial colonization in the stomach may occur during tube insertion, and the intubation will affect the lower esophageal sphincter closure, inhibit the patient to swallow, resulting in gastroesophageal reflux, the indwelling gastric tube is easy to cause the insufficient ventilation, thereby reducing the arterial oxygen saturation, leading to aspiration. In addition, it can greatly reduce the ability of the esophagus to clear the refluxed contents, which carry bacteria into the lungs and eventually induce Ventilator-Associated Pneumonia.

2. Analysis on Nursing Measures of Ventilator-Associated Pneumonia

2.1 Environmental Nursing

There should be dividing the Respiratory Care Unit into Wardship and Treatment Areas; strictly limiting the duration of each visit and the number of visitors; setting up a visitation channel; providing each family in hospital bed with special visiting clothes and regular disinfection and installing laminar flow devices in the monitoring room to monitor the results of daily disinfection.

2.2 Artificial Airway Nursing

First, do good jobs in official road disinfection.There are a large number of pathogenic bacteria in respiratory tract of patients in respiratory department.Generally every five days to replace once. The pipeline should be cleaned in a timely manner, and the heat disinfection method should be used to disinfect it according to the related process.

Second, strengthen airbag management. The establishment of artificial airway will lead to hyperaemia and edema, which will affect the swallowing function of the patients. The secretions and food residues left in the air sac can carry a large number of pathogenic bacteria. To prevent the occurrence of pneumonia, the airbags can be cleaned with a douche type of endotracheal tube. At the same time also should do a good job in the airbag inflation, the general airbag pressure control in the range of 25-30cmH2O, appropriate inflation can avoid the glottis secretion into the lower respiratory tract, is the key to prevent the Ventilator-Associated Pneumonia[7]. Third, do good jobs in the humidification of the airway. In order to avoid the dry and dehydrated air passage caused by long-term use of ventilator, the humid heat exchanger and micro-pump continuous humidification method can be used. Finally, the timely administration of sputum suction. Suction will keep the airway open. After the airway humidification treatment, the patient was given oxygen for 2 minutes, and then the patient was treated by sputum inhalation. The method of suction was mechanical expectoration combined with artificial rapping. The operation was as follows: The medical staff folded the end of the catheter with one hand and inserted it slowly into the mouth and pharynx of the patient with the other hand and opened the catheter at the end of the catheter, Inhale the secretion from the mouth and pharynx, replace the sputum tube and let the patient inhale, insert the sputum tube into the trachea about 15cm, and then rotate the sputum tube upward to absorb the sputum in the air passage. Let the assistant gather five fingers and bend slightly to the palm during the suction, relax the wrist, and tap the chest from the top down quickly. When suction, strictly following the aseptic principle, complete within 15 minutes. In the end of sputum suction, then let the patient oxygen 2 minutes. Liu Shuzhen[8] points out that strengthening artificial airway nursing can alleviate the pain of patients treated with ventilator and prevent the occurrence of Ventilator-Associated Pneumonia. Only 6.35% of them had associated pneumonia during ventilator use after the comprehensive application of airway nursing countermeasures. Ji Jianhong and others[9] have established of artificial airway nursing group and the development of artificial airway nursing program based on evidence-based nursing were compared with the routine nursing patients. The results showed that the incidence and mortality of Ventilator-Associated Pneumonia in the study group were significantly lower than that in the control group. In its opinion, respiratory department should develop improvement measures and optimize nursing quality continuously so as to minimize the incidence of Ventilator-Associated Pneumonia in order to solve management problems.

2.3 Standardizing Disinfection Operation

Qiao Hong and others found through clinical investigations that endogenous infection was the main cause of Ventilator-Associated Pneumonia. There were conditional pathogenic bacteria in ward air, medical apparatus surface, and hands of medical staff, etc.

Therefore, should do well in disinfection: First, strengthen the management of the air environment, regular ventilation, regularly disinfection of the indoor floor, walls, medical equipment and so on. Strengthening the hand hygiene awareness of medical staff, medical personnel should wash their hands before and after contact with patients with medical disinfectants. Ma Shaolei and others[10] have found that hand hygiene could significantly reduce the incidence of Ventilator-Associated Pneumonia by meta-analysis of the six included documents in using RevMan5.0 software

2.4 Postural Care

For patients with mechanical ventilation, especially when the nasogastric tube is retained, the patients should be assisted to take a semi-recumbent position, raise the head of bed from 30°to 45°, and put a soft pillow under the foot of the patient to prevent the patient from slipping under the condition of no contraindication. In a controlled clinical trial, Wang Jun and others[11] have found the incidence of Ventilator-Associated Pneumonia is 28.79% (19 cases) in the intervention group using postural care (66 cases), lower than 53.73% (36 cases) in the intervention group using recumbent position (67 cases) . And the duration of mechanical ventilation (10.91±7.89) h and hospital stay (18.52±11.83) d in the intervention group are significantly shorter than that in the control group (15.21±9.68) h and (25.17±18.92) d. The difference is statistically significant ($P<0.05$). It believes that taking a semi-decubitus position can facilitate the entry of food through the pylorus into the small intestine, avoiding food retention in the stomach and reducing the incidence of aspiration, reflux and other adverse events, and it can reduce diaphragmatic muscle, relatively increase chest volume, and thus increase the patient's vital capacity, effectively prevent Ventilator-Associated Pneumonia.

2.5 Nutrition Nursing

The immune function of the patients in respiratory care unit is low. Reasonable diet is helpful to supple adequate nutrition for the patients and improve the immune resistance of the body. Enteral nutrition support is an important way to replenish energy for patients, and enteral nutrition support is usually performed within 24-48 hours of mechanical ventilation. At present, the commonly used methods of enteral nutrition support are naso-jejunal tube and nasogastric tube feeding. A large number of studies have confirmed that, Naso-jejunal feeding is the placement of a tube for the delivery of nutrient solution through the nasal cavity into the stomach or lower part of the doorway. Cardia (of stomach) is difficult to prevent gastric reflux, so the incidences of reflux and aspiration of gastric contents are at a high rate. It is recommended to feed via nasogastric tube.

2.6 Mouth Care

The patients' mouths should be cleaned before endotracheal intubation. During the operation, two paramedics are needed to coordinate with each other. On the basis of the patient's bias, one paramedic washes slowly from one side of the mouth and the other is attracted to the opposite side by negative pressure. Zhao Xin points out that oral cleaning solution should choose 3% hydrogen peroxide. When hydrogen peroxide is injected into the oral cavity of the patient, it will selectively react with tissue enzymes to form free hydroxyl groups with strong oxidation, and free hydroxyl groups will accelerate bacterial protein decomposition and play a good role in sterilization. Through clinical practice, mouth care can not only prevent Ventilator-Associated Pneumonia, but also improve the prognosis and promote the early rehabilitation of patients. Moreover, mouth care time can also have an impact on the effectiveness of infection, Yan Fang and others through clinical practice found, incidence of pneumonia in mouth care patients per 6 hours is significantly lower than per 12h mouth carer and per 8h mouth carer, The results showed that mouth care 4 times per day could improve the oral hygiene and reduce the incidence of Ventilator-Associated Pneumonia.

3. Conclusion

Pneumonia from 48 hours after mechanical ventilation to 48 hours after extubation is known as Ventilator-Associated Pneumonia. Once the patients appear Ventilator-Associated Pneumonia, it will increase the difficulty of being offline, and it may worsen the condition and cause the patient to die. According to foreign scholar Bakhtiari, the mortality rate of Ventilator-Associated Pneumonia is in the range of 25%-75%. China's Ministry of Health has found that the prevalence of Ventilator-Associated Pneumonia is about 44.19% and the fatality rate is about 50.25%. About 95% of the patients with Ventilator-Associated Pneumonia are in the respiratory care, so it is very important to do well in the preventive nursing in the respiratory care unit. Staff should make scientific nursing measures according to the hospital conditions and the actual situation of patients to eliminate the risk factors of Ventilator-Associated Pneumonia as far as possible, and to guarantee the life safety of patients in respiratory care unit.

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Short Term Efficacy and Safety Analysis of Kun Tai Capsule and Levi AI in Treating Climacteric Syndrome

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Abstract: ***Objective:*** To explore the short-term efficacy and safety of Kun Tai capsule combined with Levi's love in the treatment of climacteric syndrome. ***Methods:*** 120 female patients with menopause syndrome in our hospital in July ~2017 January 2015 were randomly divided into the observation group (n=60) and the control group (n=60), the control group was treated with Levi love, and the observation group was based on the combined treatment of Kun Tai capsule and compared the therapeutic effect of the two groups. ***Results:*** the total effective rate of treatment in the observation group (91.67%) was significantly higher than that of the control group (75%), and the difference between the two groups was statistically significant (x2=10.005, P=0.001), and the E2 (38.21 + 8.23) pg/ml of the observation group was significantly higher than that of the control group (P<0.05), and FSH (39.42 + 2.38) IU/ml and LH (10.16 + 1.82) IU/ml were significantly lower than the control group. The difference of the two groups was statistically significant (P<0.05), and the incidence of adverse reactions in the observation group (6.67%) was significantly lower than that of the control group (18.33%), and the difference between the two groups was statistically significant (x2=6.125, P=0.013). ***Conclusion:*** Kun Tai capsule combined with Levi's love treatment of climacteric syndrome has significant short-term effect, less adverse reactions and high safety, and it can be widely used in clinical practice.

Key words: Climacteric syndrome, Kun Tai capsule, Levi love, short term effect, Levi love

Introduction

Menopausal syndrome is one of the common gynecological diseases. It is a group of syndromes characterized by autonomic nervous system dysfunction caused by ovarian dysfunction and estrogen fluctuations before and after menopause. [1] At this time, the patient will have decreased sexual function, irregular menstruation, emotional instability, anxiety, insomnia, etc., causing great pain to the patient's physiology and psychology, seriously reducing the quality of life of patients. [2] At present, hormone replacement therapy is often used in clinical practice, which has certain therapeutic effects, but has adverse reactions. Studies have suggested that Chinese medicine has a specific positive effect in the treatment of menopausal syndrome. [3] Therefore, this study used Kun Tai capsule combined with Levi love to treat menopausal syndrome and analyzed its short-term efficacy and safety. The results are reported below.

1. General information and methods

1.1 Normal information

120 female patients with menopausal syndrome were enrolled in our hospital from January 2015 to July 2017. The inclusion criteria were: (1) met the diagnostic criteria for female climacteric syndrome [4]; (2) signed informed consent. Exclusion criteria: (1) liver and kidney dysfunction; (2) mental system diseases; (3) gynecological tumors; (4) breast diseases; (5) drug contraindications. After the study was approved by the Medical Ethics Committee of our hospital, (whether the ethical consent is necessary: the core editorial department requires it) is divided into observation group (n=60) and control group (n=60). Observation group: age 45~57 (49.68±3.27) years old, 1-6 years of menopause, average 3.5±0.8 years; course of disease 0.6~3.7 (2.43±0.57) years. The control group: age 47~55 (49.72±2.96) years old, 1-5 years of menopause, average 3.3±0.6 years; course of disease 0.5~3.9 (2.46±0.58) years. There was no significant difference in the baseline data between the two groups. The feasibility of this study was (P>0.05). (Whether to explain the length of menopause in the case of patients)

1.2 Treatment

The observation group was treated with Levi love United Kun Tai capsule, specifically: Levi love (Tiberon Tablets) (Nanjing Pharmaceutical Co., Ltd.; National Pharmaceutical Standard H20051085; Specification: 2.5mg/s) Oral, 2.5mg/time, 1 time / d, treatment for 3 months. Kun Tai capsule (Guiyang Pharmaceutical Co., Ltd.; National Pharmaceutical Standard Z20000083; Specification: 0.5g/s) Oral, 2g/time, 3 times/d, treatment for 3 months.

The control group was treated with Levi love, and the treatment method and treatment time were the same as above.

1.3 Observation indicators

(1) Observing the short-term efficacy of the two groups for 3 months, the efficacy criteria were divided into complete remission, markedly effective, effective, ineffective, total clinical effective rate = (complete remission + markedly effective + effective) / n * 100%. [5] (2) Record adverse reactions during the two treatment periods,

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including vaginal bleeding, breast tenderness, and gastrointestinal discomfort.

1.4 Statistical analysis

The statistical software SPSS22.0 was used to process the data. The count data was represented by "%". The x2 test was performed between the groups. The measurement data was represented by "±S", and the t test was performed between the groups. All the results were significant at P<0.05.

2. Result

2.1 Comparison of short-term efficacy between the two groups

The total effective rate of treatment in the observation group (91.67%) was significantly higher than that in the control group (75%). The difference between the two groups was statistically significant (x2=10.005, P=0.001); see Table 1 for details.

Table 1. **Comparison of short-term efficacy between the two groups (n, %)**

Group	complete relief	Significant effect	effective	invalid	Total efficiency
Observation	28（46.67%）	18（30%）	9（15%）	5（8.33%）	55（91.67%）
Control group	16（26.67%）	17（28.33%）	12（20%）	15（25%）	45（75%）
x2					10.005
P					0.001

2.2 Comparison of hormone levels between the two groups

The E2 (38.21±8.23) pg/ml in the observation group was significantly higher than that in the control group (P<0.05), FSH (39.42±2.38) IU/ml, and LH (10.16±1.82) IU/ml were significantly lower than the control group. The difference between the two groups was statistically significant (P<0.05). There was no significant difference in endometrial thickness between the two groups (P>0.05). See Table 2 for details. (There is a case of endometrium in the table, but the analysis is not mentioned)

Table 2. **Comparison of safety between the two groups (n, %)**

Group	E2（pg/ml）		t	P	FSH（IU/ml）		t	P
	Before treatment	After treatment			Before treatment	After treatment		
Observation（n=60）	16.72±5.71	38.21±8.23	16.46512.167	0.000	51.42±3.48	39.42±2.38	22.04711.805	0.000
Control group（n=60）	16.23±6.26	31.44±7.43		0.000	51.83±3.75	44.66±2.84		0.000
t	0.448	4.729			0.621	10.954		
P	0.655	0.000			0.536	0.000		
Group	LH（IU/ml）		t	P	Endometrial thickness (mm)		t	P
	Before treatment	After treatment			Before treatment	After treatment		
Observation（n=60）	24.15±4.58	10.16±1.82	21.98815.689	0.000	3.31±0.45	3.28.±0.37	0.399	0.6910.804
Control group（n=60）	23.82±4.17	14.28±2.19		0.000	3.29±0.47	3.27±0.41	0.248	
t	0.412	11.207			0.238	14.245		
P	0.681	0.000			0.812	0.845		

2.3 Comparison of safety between the two groups

The incidence of adverse reactions in the observation group (6.67%) was significantly lower than that in the control group (18.33%). The difference between the two groups was statistically significant (x2=6.125, P=0.013); see Table 3 for details.

Table 3. **Comparison of safety between the two groups (n, %)**

Group	Vaginal bleeding	Breast pain	Gastric discomfort	Breast hyperplasia	Adverse reaction rate
Observation group（n=60）	1（1.67%）	2（3.33%）	0（0%）	1（1.67%）	4（6.67%）
Control group（n=60）	2（3.33%）	4（6.67%）	1（1.67%）	2（3.33%）	11（18.33%）
x2					6.125
P					0.013

3. Discuss

Climacteric syndrome refers to a group of syndromes with autonomic nervous system dysfunction and neuropsychological symptoms caused by fluctuations or reduction of sex hormones before and after menopause. [4-5] Menopause can be divided into natural menopause and artificial menopause. Natural menopause

refers to the exhaustion of follicles in the ovary, or the remaining follicles lose their response to gonadotropins, follicles no longer develop and secrete estrogen, cannot stimulate endometrial growth, leading to menopause. [6-7] Decreased estradiol secretion in patients with climacteric syndrome, resulting in disordered body temperature, causing sleep disorders, hyperhidrosis, vaginal dryness, difficulty in sexual intercourse and atrophy of the genitourinary tract, irritability, fatigue, loss of libido, etc. [8-9] Most of the 45-60-year-old women will have menopausal syndrome, which can cause irritability, insomnia, palpitations, etc. [10]

Levi love is one of the commonly used drugs in hormone replacement therapy. It is an effective drug for the treatment of menopausal syndrome. The hormonal activity of tibolone itself is weak. Its main role comes from three more active metabolites, two of which One metabolite has affinity with the estrogen receptor, while the other metabolite has affinity with the progesterone and androgen receptor, which can selectively regulate the activity of the body's sexually active receptors, effectively alleviating the symptoms of menopausal syndrome in patients, after taking the drug Can quickly relieve symptoms within a few weeks, patients with high tolerance, fewer adverse reactions, foreign studies have shown that long-term single use of the drug may have patients with weight changes, dizziness, excessive sebum secretion, skin disease, vaginal bleeding, Headache, gastrointestinal discomfort, changes in liver function indicators, increased facial hair growth, anterior tibial edema, etc. [11-12] Chinese medicine believes that menopausal syndrome is caused by blood nourishing, yin and yang disorders, kidney gas loss caused by the disease, which is mainly due to the deficiency of the essence, resulting in no blood and blood; the standard is mainly liver qi stagnation, and liver diarrhea Liver qi stagnation affects emotions and causes depression. [13] Therefore, Chinese medicine treatment of "stagnation syndrome", "flaws", should start from the kidney to fill the essence, Shu Gan Shun Qi, kidney to promote qi and blood biochemistry; Shu Gan to make the liver blood strips outside. [14] Treatment is to nourish qi and nourish blood, nourishing yin and clearing heat. Kun Tai capsule contains Chinese medicines such as berberine, white peony and so on. It has calming and soothing, nourishing yin and nourishing blood, eliminating the trouble of relieving dryness, and long-term safety. The results of this study indicate that there are always treatments in the observation group. The efficiency was significantly higher than that of the control group ($P < 0.05$); the results suggest that the efficacy of Levi's combined with Kun Tai capsule is more significant than that of Levi love alone. From Table 2, the incidence of adverse reactions in the observation group was significantly lower than that in the control group ($P < 0.05$); indicating that the two drugs combined with fewer adverse reactions and higher safety, reflecting the superiority of integrated Chinese and Western medicine, overall differentiation, Consistent with relevant research results. [15]

In summary, Kun Tai capsule combined with Levi love treatment of menopausal syndrome has a short-term effect and has fewer adverse reactions and high safety. It can be used clinically.

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Patients With Curative Effect and Survival Analysis of the Real World of Shashen Maidong Decoction in the Treatment of Advanced Non-small Cell Lung Cancer Based on

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Abstract: ***Objective:*** To study the clinical effect of the treatment of advanced non-small cell lung cancer (non-small cell lung cancer) on the basis of chemotherapy based on the real world and to improve the quality of life. ***Methods:*** 106 patients with advanced non-small cell lung cancer treated in our hospital from January 2010 to October 2017 were selected as the subjects. 53 cases were treated as the control group and 53 cases were treated with Sha Shen Mai Dong decoction as the experimental group. The improvement of clinical symptoms and the therapeutic effect of the two groups were observed and the quality of their survival was evaluated. ***Results:*** (1) the total score of TCM symptoms (2.24 + 0.25) after treatment was significantly lower than that of the control group (5.67 + 0.82) ($P < 0.05$); (2) the total effective rate of treatment in the experimental group was 94.34% significantly higher than that of the control group ($P < 0.05$), and the total score of the FACT-G scale (90.12 + 6.57) in the experimental group was significantly higher than that of the control group (90.12 + 6.57). 69.43 + 10.25) ($P < 0.05$). ***Conclusion:*** on the basis of paclitaxel combined with cisplatin chemotherapy, the treatment of advanced non-small cell lung cancer patients with Radix Ophiopogon decoction can reduce the clinical symptoms, enhance the curative effect and improve the quality of life. It is worth popularizing.

Key words: Advanced non-small cell lung cancer, Radix Ophiopogon soup, curative effect, quality of life

Introduction

Non-small cell lung cancer is a common type of lung cancer. Compared with small cell lung cancer, the growth rate of cancer cells is slow, and there are no obvious symptoms in the early stage, so it is difficult to find. As the cancer cells continue to spread, it will trigger the cough symptoms after they stimulate the patient's respiratory tract, and develop to the late stage, then progressive dyspnea will occur and symptoms such as fever, chest tightness and hemoptysis appear. Advanced non-small cell lung cancer has lost the chance of surgical treatment. In order to prolong the survival time of patients, chemotherapy is needed. Some scholars have pointed out that chemotherapy combined with Chinese medicine has complementary effects, which can improve the clinical therapeutic effect of advanced non-small cell lung cancer. In order to confirm the above conclusions, 106 cases of patients with advanced non-small cell lung cancer were selected for clinical comparative study.

1. Information and Metheds

1.1 General information

Methods 106 patients with advanced non-small cell lung cancer in our hospital were selected as the research subjects. Inclusion criteria: (1) the clinical symptoms conform to the relevant diagnostic criteria in the consensus of the diagnosis and treatment experts for advanced primary lung cancer in China; (2) diagnosis and diagnosis by imaging, radioimmunology and pathology; (3) the expected survival time is over 6 months; (4) patients and their families voluntarily sign the informed consent; 5. Exclusion criteria: (1) combined liver and kidney dysfunction; (2) combined pleural effusion or lesion of the pleura induced emphysema; (3) combined respiratory diseases; (4) diseases of the immune system; (5) abnormal blood routine examination. In the control group (n=53), there were 31 males, 22 females, 21 adenocarcinoma, 18 squamous cell carcinoma, 14 adenoscalc, 34-67 years old and average (50.8 + 13.9) years old; in the experimental group (n=53), there were 30 men, 33 women, 20 cases of adenocarcinoma, 18 cases of squamous carcinoma, adenoscale. There were 15 cases of cancer, aged 35-69 years, with an average of 52.1 years (14.3 years). There was no significant difference in baseline data between the two groups ($P > 0.05$).

1.2 Methods

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Control group: Patients were given chemical treatment. Before treatment, 12h and 6h were given 20mg dexamethasone (Chinese medicine quasi word H41020727, Hainan Pharmaceutical Factory Limited Pharmaceutical Factory). The patients were first given 175mg/m2 paclitaxel (national medicine quasi word H19994040, Taiji Group Sichuan Taiji Pharmaceutical Co., Ltd.) + 500ml saline infusion for 1-3 days. 30mg/m2 cisplatin (H20040813, Jiangsu haosen pharmaceutical Limited by Share Ltd) was given to the patient, and the patients were treated with diuresis, liver preservation, antiemetic, antiemetic and nutritional support during the chemotherapy. 1 month for 1 courses of treatment, a total of 2 courses of treatment.

Experience group: On the basis of chemotherapy, patients were treated with the decoction of Radix Angophora and Radix Ophiopogonin. The basic groups are as follows: Astragalus mongholicus 30g, tetrandrine 12g, , Ophiopogonin 12g, Yuzhu 12g, mulberry leaves 9g, Radix Astragals 15g, Radix Glycyrrhizins 6g, Nansha ginseng 15g, Radix astragalophia 20g, Cordyceps sinensis 3G, five finger peaches 20g, white flower hedyotis herb. With the symptoms of the disease, add and subtract dosage: if the patient coughed seriously, the basic group was added with Fritillaria 12g and Platycodon 6G; if there were fever symptoms, the basic group was added Scutellaria 30g and Houttuynia 3G; if there were chest pain symptoms, it was added to the basic group with Fructus aurantii 12g, tulip 12g, and yerhutus 15g; if there was a hydrothorax In the basic group, we add Poria 9g, Polyporus 9g, and Sophia Sophia 3G on the prescription of the basic group. If there are hemoptysis, we add the Bletilla striata 12g, the root 20g of the white grass and the 5g of the root of lotus root in the prescription of the basic group. Take the above Chinese medicine, add water to cook, take the juice, take 200ml/ times, 2 times / day, 1 doses / day, and continue to take 2 months.

1.3 Observation index

① The symptom observation of traditional Chinese medicine: the severity of two groups of clinical symptoms was evaluated according to the table of advanced lung cancer. The main symptoms included fever, cough, shortness of breath, chest tightness, hemoptysis, poor appetite, and 0-3 grade scoring system, namely, 0, 1, 2 and 3, with a total score of 0-18, The higher the score, the more serious the symptoms.

②The short-term curative effect of Western medicine: the evaluation of the effect of two groups of recent treatment with reference to the evaluation standard of solid tumor effect (RECIST), which was divided into complete remission (complete disappearance of focus), partial remission (more than 30%), stability (less than 30% or less than 20%), and progress (focus of focus). An increase of more than 20% or a new lesion appeared). The total effective rate of the two groups (complete remission and partial remission) was statistically analyzed.

③Quality of life observation: Two groups of quality of life were evaluated by the function evaluation system of cancer treatment - common module (FACT-G). The evaluation indexes included physiological factors (7 items), emotional factors (6 items), social factors (7 items) and functional factors (7 items). Each item used a 0-4 grade scoring system, with a total score of 108, and the higher the score. The better the quality of life is.

1.4 Statistical method

According to SPSS19.0 statistical ~~an~~alysis, the normal measurement data were expressed in $\bar{X}$ ±s, t value was tested, the count data were expressed, and the statistical significance was statistically significant, with the statistical significance of $P < 0.05$ as the evaluation criterion.

2. Rescult

2.1 Observation on the improvement of clinical symptoms after treatment in two groups

The difference of symptom score and total score between the control group and the experimental group was statistically significant ($P < 0.05$), as shown in Table 1.

Table 1. Comparison of two groups of TCM symptom scores after treatment [$\bar{X}$ ±s，scores]

Group	Number of cases	Fever	Cough	Shortness of Breath	Chest tightness	Hemoptysis	Poor appetite	Total scores
Control group	53	1.17±0.56	1.13±0.48	1.02±0.41	1.07±0.46	0.95±0.36	0.78±0.33	5.67±0.82
Experience group	53	0.52±0.23	0.47±0.18	0.41±0.13	0.39±0.10	0.36±0.13	0.32±0.11	2.24±0.25
t	-	7.817	9.373	10.325	10.356	11.222	9.627	29.128
P	-	＜0.05	＜0.05	＜0.05	＜0.05	＜0.05	＜0.05	＜0.05

2.2 Observation on the therapeutic effect of two groups

The total effective rate of treatment in the control group was 81.13%, the total effective rate in the experimental group was 94.34%, and the difference between the two groups was significant（P＜0.05）, as shown in Table 2.

Table 2. Total effective rate of treatment in two groups [n（%]

Group	Number of cases	Complete remission	Partial remission	Stable	Progress	Total effective rate
Control group	53	20（37.74）	23（43.39）	9（16.98）	1（1.89）	81.13
Experience group	53	29（54.72）	21（39.62）	3（5.66）	0（0.00）	94.34
χ^2	-	-	-	-	-	4.296
P	-	-	-	-	-	＜0.05

2.3 Observation on the improvement of life quality after treatment in two groups

There was no significant difference in the quality of life between the two groups before treatment（P＞0.05）. After treatment, the scores and total scores of all the two groups were increased, and the increase in the control group was significantly smaller than that in the experimental group（P ＜0.05）, as shown in Table 3.

Table 3. Comparison of two groups of life quality scores before and after treatment [$\bar{X}$±s，scores]

Group	Number of cases	Physiological factors		Affective factors		Social factors		Functional factors		Total effective rate	
		Before	After	Before	After	Before	After	Before	After	Before	After
Control group	53	12.12±4.88	17.21±5.21	11.76±4.76	15.21±4.88	12.63±4.72	18.46±5.09	12.85±4.59	18.25±4.93	49.34±8.43	69.43±10.25
Experience group	53	12.09±4.93	23.91±3.26	11.78±4.73	21.19±3.45	12.67±4.65	23.56±3.62	12.82±4.54	22.08±3.26	48.76±8.37	90.12±6.57
χ^2	-	0.031	7.937	0.022	7.285	0.044	5.944	0.034	4.718	0.355	12.372
P	-	＞0.05	＜0.05	＞0.05	＜0.05	＞0.05	＜0.05	＞0.05	＜0.05	＞0.05	＜0.05

3. DISCUSSION

Lung cancer is a common malignancy, and its mortality rate is the highest in all cancer diseases. Among them, lung cancer includes two types: small cell lung cancer, non-small cell lung cancer, the latter account for about 85%, and affected by the environment, living habits and other factors, the incidence of the disease is increasing. Typical symptoms are absent in the early stage of the disease. Most patients have lost the best time of surgery when they are diagnosed. Chemotherapy is an important means for clinical treatment of lung cancer. However, chemotherapy drugs lack targeting, which not only kill tumor cells, but also damage normal cells, and chemotherapy will cause gastrointestinal symptoms, bone marrow inhibition and other adverse reactions, reduce the quality of life and affect the clinical dependence.

Lung cancer is attributed to the category of "lung wilt" and "lung product" in Chinese medicine. The internal organs cause dysfunction due to deficiency of positive Qi, the external poison invade the chest, missionary education, blood blockage, phlegm coagulation and qi stagnation, and finally form the lung block, so the clinical treatment advocates eliminating evil spirits and nourishing the lungs. Sha Shen Mai Dong soup is from the ancient book "disease of disease", the basic group of Astragals has the effect of diuresis protecting liver, prevention and control, mulberry leaves have the effect of eliminating swelling and dispersing gas, dispelling wind and relieving pain, radix glehnia and Hedy Otis diffuser can relieve heat, relieve spasmodic and relieve pain, and radix pseudostellariae can raise lung yin and kidney yang. The results of the study showed that the clinical symptom score, total effective rate and quality of life score of the experimental group were superior to those of the control group, which was mainly because it could not only promote the apoptosis of lung cancer cells, but also reduce the toxicity of chemotherapy, reverse the function of lung cancer resistance, improve the clinical symptoms and improve the quality of life.

In conclusion, chemotherapy combined with Sha Shen Mai Dong decoction has a positive effect on improving the clinical efficacy and improving the quality of life of advanced non-small cell lung cancer, and it is worth learning from.

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Clinical and Pathological Features, Molecular Typing and Prognosis of Breast Cancer in Young People

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Abstract: ***Objective:*** To study the clinical and pathological features, molecular typing and prognosis of breast cancer in young people. ***Methods:*** The clinical data of 80 young patients with breast cancer (40 cases aged 31-35 and 40 aged below 30) diagnosed and treated in the hospital from November 2015 to November 2017 were retrospectively analyzed as the observation group. Another 40 cases of middle-aged and elderly patients with breast cancer (more than 35 years old) were selected as the control group. The clinical and pathological features, molecular typing and prognosis in the two groups were compared. ***Results:*** Triple-negative breast cancer, human epidermal growth factor receptor-2 and hormone receptor negative metastasis or recurrence were more common in the observation group (P<0.05). The clinical staging, tumor diameter, hormone receptor and metastasis and recurrence in the two groups showed statistically significant difference (P<0.05). The disease-free survival rate and the total survival rate of those aged over 35 and of those aged below 30 (90.00% and 97.50%) showed statistically significant difference (P<0.05). Single and multiple factors analysis showed that the prognosis-affecting factors of breast cancer in young people included tumor size (over 5cm in diameter) and molecular typing. ***Conclusion:*** The pathological features of breast cancer in young patients are more complicated, and the prognosis for it is poor. Clinical diagnosis and treatment should be done as soon as possible.

Key words: breast cancer in young people, molecular typing, pathological features, prognosis

Introduction

As one of the most common cancers in the world, breast cancer has become the third most common cancer in the world, which is more common in the premenopausal women in our country; young people gradually have breast cancer, and the young people have become the non-neglected group with breast cancer, which poses a greater threat to mankind[1-3]. Among them, the proportion of young patients younger than 35 years old is higher; according to epidemiology and current causes, it is found that the prevalence of young people with breast cancer in the world is increasing, to which the clinical doctors and patients should attach great importance[4-5]. Compared with the middle and old people, the young patients with breast cancer have poor prognosis due to special physiological features (invasive ability of behavior), which has received more and more attention from scholars in recent years; the relationship among pathological features, molecular typing and prognosis of breast cancer in young people is not reported clinically, which has high study value[6-8]. In this paper, 40 cases of young patients with breast cancer aged 31-35 years, 80 cases of patients younger than 30 years old and 40 cases of middle-aged and old-aged patients treated in the hospital from November 2015 to November 2017 were retrospectively analyzed and compared. The purpose of this study was to discover and receive the corresponding diagnosis and treatment at the earliest opportunity so as to improve the patients' conditions and improve the survival rate of the prognosis; the present study will be described in detail as follows:

1. Data and Methods

1.1 General data

The data of 80 cases of young patients with breast cancer treated by the hospital from November 2015 to November 2017 were analyzed as the observation group. Another 40 cases of middle-aged and elderly patients with breast cancer (more than 35 years old) were selected as the control group. In the observation group, there were 40 patients among 31-35 years old; 40 patients were lower than 30 years old; the mean age was (22.56±2.12) years old; the body weight was among 46-58 kg; the mean weight was(54.4±1.55) kg; 10 cases were invasive lobular carcinoma; 15 cases were mucinous carcinoma, 55 cases were invasive ductal carcinoma. In the control group, patients were among 36-76 years old; the mean age was (52.38±4.31) years old; the body weight was among 46-57 kg; the mean weight was(51.22±1.54) kg; 2 cases were invasive lobular carcinoma; 5 cases were mucinous carcinoma, 33 cases were invasive ductal carcinoma. There was no statistical difference

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between the two groups of body weight and disease types (P> 0.05). The protocol was approved by the Medical Ethics Committee, with the consent of the subject being voluntarily signed; the information was complete; the patients with psychiatric disorders were excluded, and all patients were confirmed by fluoroscopy, consistent with the clinical diagnostic criteria for breast cancer[9].

1.2 Clinical pathological diagnosis [10-15]

(1) Tissue typing: This study adopted the mothod of immunohistochemical streptomycin antibiotin protein--peroxidase, and replace primary antibodies with PBS buffer solution as the negative control. The positive cells of progesterone receptor (PR) and estrogen receptor (ER) in cancer cells were greater than 1% as the positive. Human epidermal growth factor receptor-2 (HER-2) was used as a standard for the invasion of cancer cells with strong positive cells greater than 30%. Ki-67 was positive as the staining positive cells of the cancer cell nuclei were greater than or equal to 14%. (2) Subtypes of breast cancer were divided into linear A and type B, three-negative and HER-2 overexpression, in which there was a positive or both HER-2 negative and positive when luminal A was PR or ER. There is a positive or both HER-2 positive and positive when luminal B was PR or ER. Three-negative breast cancer was judged to be PR or ER; HER-2 was negative. HER-2 overexpression was negative for PR or ER, and HER-2 was positive.

1.3 Treatment method

According to the actual condition of the patients, the classical radical cure operation, the radical cure operation and the breast-conserving operation are given; the result after the operation and the pathological examination of the patients and the condition of the hormone receptor are subjected to endocrine, radiotherapy and adjuvant chemotherapy.

1.4 Clinical observation index

The clinical pathological features, molecular typing and prognosis of the two groups were observed and compared; the survival rate of patients was statistically analyzed after half a year follow-up.

1.5 Statistical application

Data were analyzed by SPSS2.0 software with the help of normal metering data of （$\bar{X}\pm s$）. By means of (n,%) reaction normal counting data, the conditions of normal metering data between groups were tested and compared with t; the metering data were tested and compared with X^2, and the single and multi-factors were analyzed by Kaplan-Meier and Cox respectively. The difference was statistically significant (P <0.05).

2. Results

2.1 Comparison of the pathological characteristics of the two groups

The clinic pathological type of the two groups was infiltrating ductal carcinoma, but there is no significant difference between the two groups (P> 0.05). In the observation group, metastasis or recurrence of three-negative breast cancer in patients at the age of less than 30 years old, HER-2 and ER negative are easily occur (P<0.05); The clinical staging and molecular typing, tumor diameter, HER-2 and ER and metastasis recurrence were with statistical significance (P<0.05).

2.2 Comparison of the follow-up

results of the two groups There was significant difference in disease free survival rate and overall survival rate (P<0.05, as shown in Table 1), which was older than 35 years old and less than 30 years old.

Table 1. Comparison of the follow-up results of the two groups

Item	Control group (n=40)		Observation group (n=80)			
			31-35 years old		Less than 30 years old	
	Number of cases	Percentage	Number of cases	Percentage	Number of cases	Percentage
Disease free survival rate	36	90.00[a]	31	77.50	28	70.00
Overall survival rate	39	97.50[a]	35	87.50	32	80.00
X^2	-	5.0000	-	1.6216	-	2.5023
[a]*P*	-	＜0.05	-	＞0.05	-	＞0.05

Note: Compared with patients with less than 30 years old, [a]*P*<0.05.

2.3 Related influencing factors of the observation group

According to the single factor, The main factors influencing the prognosis of young breast cancer include molecular typing, ER-positive, metastasis or recurrence, tumor size (greater than 5 cm) and radical operation of breast cancer. According to the multiple factors, the independent risk factors of prognosis of young breast cancer include molecular typing, lymph node metastasis and tumor size (greater than 5 cm) (P<0.05, as shown in Table 2).

Table 2. Analysis of prognostic multi-factors in the observation group (n)

Factor	Disease free survival rate			Overall survival rate		*P*
	HR	95%CI	OR	HR	95%CI	
Molecular typing	0.029	1.326-3.317	1.332	3.332	1.256-2.387	＜0.05
Breast cancer radical surgery	0.414	0.282-3.321	0.768	1.723	0.189-2.831	＞0.05
ER Positive	0.327	0.542-2.623	0.753	2.732	0.331-1.422	＞0.05
Metastasis or recurrence	0.027	1.333-3.539	5.453	4.442	1.339-3.539	＜0.05
Tumor size	0.018	1.221-3.438	2.843	3.833	1.211-3.438	＜0.05

3. Discussion

With the continuous development of clinical diagnosis and treatment technology and the improvement of people's health care consciousness, especially the development of breast MRI and high-frequency color Doppler ultrasound technology, the clinical detection probability of breast cancer is improved, so as to be beneficial for early detection and active treatment and promote the improvement of the patients' condition and prolong the survival time of their prognosis[16-18]. For breast cancer, targeted therapy, endocrine therapy and adjuvant chemotherapy are generally adopted, but the differences between older and young breast cancer patients are considered to be large; the pathological stage of the young patients is relatively late, and there are some characteristics like large masses, high third negative proportion, high clinical stage, high metastasis rate of lymph node and high histological grade; early clinical judgment is very important to improve the survival rate of patients[19]. Thus the pathological characteristics, molecular typing and prognosis of young patients with breast cancer are analyzed in this paper.

By analyzing the clinical pathological characteristics and molecular typing of two groups, the results show that the incidence of three-negative breast cancer metastasis or recurrence, HER-2 and ER-negative is higher for the patients at the age of less than 30 years old. There are significant differences in clinical staging and molecular typing, tumor diameter, HER-2 and ER and metastasis recurrence. The disease free survival rate for the patients at the age of more than 35 years old is 90.00% and the overall survival rate is 97.50%, which are less than 70.00% and 80.00% for the patients at the age of less than 30 years old. It is highly consistent with the results of Tian Yong[20] that the disease free survival rate of different molecule types is high with 85%. It is suggested that the pathological characteristics of young patients with breast cancer are complicated and the prognosis is poor, so it should be found clinically and treated as soon as possible. The results show that the prognostic single factor of young breast cancer include molecular typing, ER-positive, metastasis or recurrence and radical operation of breast cancer; the multiple factors include molecular typing, lymph node metastasis and tumor size (greater than 5 cm). It is suggested that there are many prognosis influence factors of young patients with breast cancer; prognosis survival probability of patients can be increased by taking corresponding prevention and treatment measures according to this factor. Molecular typing of tumor is a scientific basis for clinical staging and prognosis of tumor. By means of comprehensive molecular analysis, the classification of tumor can be transformed into a classification system based on molecular characteristics as basic new tumor. Breast tumor molecular typing is an important reference for the accuracy of staging of breast cancer and the accuracy of prognosis judgment and the individuality of the treatment plan, and it becomes an increasingly important classification method for disease (pathological classification)[21,22]. The metastasis of lymph node is the most important cause of tumor recurrence or even death, and the metastasis number and prognosis of the patients are closely related. The lymph node metastasis is a clinically stronger prognostic factor in breast cancer. The chances of lymph node metastasis in middle-aged and elderly patients are lower, and the positive rate and invasive rate of lymph node metastasis in breast cancer are lower[23]. The local treatment methods, such as breast conserving surgery, will have an effect on the recurrence probability of the tumor; besides, the systemic treatment such as endocrine and chemotherapy also has a certain effect on the long-term curative effect of the breast conserving operation; the incidence of endocrine therapy in middle-aged and elderly patients with breast cancer is low, which may be related to the lower PR or ER positive rate. The proportion of young patients in the treatment of breast conserving surgery is high, and after surgery, chemotherapy and radiation therapy are generally adopted, and the breast conserving surgery is not an independent factor affecting the prognosis of young breast cancer. Due to the factors such as the external environment and the number of samples, this study did not deeply analyze the quality improvement of the prognosis life of young breast cancer, and it needs further research and supplement.

In conclusion, the young patients with breast cancer have the characteristics of complicated pathological features and poor prognosis; it needs to confirm clinically and actively take effective treatment measures as early as

possible, and strengthen the health education of young women, make regular physical examination, promote the prognosis of patients and improve the survival rate.

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Analysis of Clinical Effect, Cardiac Function Index and Adverse Events of Levocarnitine Combined with Coenzyme Q10 for Patients with Severe Chronic Heart Failure

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Abstract: ***Objective:*** To observe the effects of levocarnitine combined with Coenzyme Q10 and the influence of cardiac function and adverse events in the treatment of severe chronic heart failure. ***Methods:*** The clinical data of 128 patients with severe CHF who had received treatment in the hospital f om May 2015 and May 2017 are selected. According to the different therapeutic schedules, these patients are divided into 2 groups with 64 cases in each group: patients in the control group received routine treatment, whereas those in the observation group are treated with routine treatment plus Levocarnitine and coenzyme Q10. The curative effect, cardiac function and adverse events are compared between the two groups. ***Results:*** The total effective rate of treatment in the observation group is 95.31%, higher than that in the control group, which is 81.25%, and 6min walking distance in the observation group is (374.38±51.19)m, farther than the control group ($P<0.05$); the LVEF, LVESD and LVEDD in the observation group after treatment are respectively (41.63±3.22)%, (47.41±10.72)mm and (58.26±6.87)mm, all shown to be better than the control group ($P<0.05$); the adverse reactions during the treatment showed no statistical difference between the two groups ($P>0.05$). ***Conclusion:*** For patients with severe chronic heart failure, Levocarnitine combined with coenzyme Q10 is safe and effective, which can improve their heart function and the clinical efficacy, without increasing the incidence of adverse reactions.

Key words: Severe, Chronic Heart Failure, Levocarnitine, Coenzyme Q10

Introduction

Chronic heart failure (CHF) is an end-stage performance in all kinds of heart disease. As the heart is filling, the function of pump blood is weakened, which leads to the lack of perfusion of organ tissue, which is a syndrome of lung and congestion systemic circulation[1]. The development of CHF is usually expressed as chronic and progressive. Therefore, it is recommended early treatment to prevent the occurrence of adverse events like sudden death; diuresis, cardiotonic and vascular expansion are regular treatment means, which can effectively relieve the symptoms of CHF. For patients with severe CHF, the effect is not too ideal[2]. The clinical study proves that the levocarnitine has the effects of relieving myocardial load, improving cardiac output and inhibiting inflammatory response; Coenzyme Q10 is an antioxidant with the physiological functions of protecting and restoring the integrity of biofilm; if they are combined to treat CHF, the therapeutic effect can be remarkable[3-4]. Therefore, 128 patients with severe CHF from May 2015 to May 2017 are investigated to research the combined effects of levocarnitine and coenzyme Q10. The results are as follows.

1. Data and Methods

1.1 General data

The clinical data of 128 patients with severe CHF treated in our hospital from May 2015 to May 2017 are selected. The criteria are as follows: All are diagnosed by B-ultrasound as heart failure in accordance with the diagnostic criteria of severe CHF in *Guidelines for the Diagnosis and Treatment of Heart Failure in China*[5]. The grading of NYHA is grade Ⅲ-Ⅳ; LVEF is less than 45%, and the history of heart failure is more than 1 year. Voluntary informed consent is signed. Excluding standard: the patients with hepatorenal dysfunction, angina pectoris, myocardial infarction, arrhythmia, pulmonary heart disease, obstructive pulmonary disease, drug allergy and mental illness are excluded. They are divided into two groups according to the treatment regimen. There are 64 cases in the observation group; the ratio of male to female is 34 to 30; they are among 63-84 years old; the average age is (77.21±4.31) years old; the duration of disease is 6-12 months, and the average is (9.29±3.21) months. There are 64 cases in the control group; the ratio of male to female is 31 to 33; they are among 60-85 years old; the average age is (76.23 ±4.13) years old; the

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duration of disease is 6-10 months, and the average is (8.73±2.94) months; there is no statistical significance between the two groups (P>0.05).

1.2 Methods

Routine treatment is applied in the control group: Metprolol Tartrate (Jiangsu Meitong Pharmaceutical Co., Ltd., National Drug Application Form H32025116, 25mg/tablet), 100 mg/time, 2 times/day; Losartan (Beijing Wansheng Pharmaceuticals Co., Ltd., National Drug Application Form H20080015, 50mg/particle), 50m/time, and 1 time/day; Spironolactone (Zhangjiakou Yunfeng Pharmaceutical Co., Ltd., National Drug Application Form H13022194, 20 mg/tablet), 40 mg/time, 2 times/day. On the basis of the control group, the observation group is treated with levocarnitine (Northeast Pharmaceutical Group Shenyang No. 1 Pharmaceutical Co., Ltd., National Drug Application Form H19990372, 10ml:1g), and Coenzyme Q10 (Zhejiang Deotic Pharmacy Co., Ltd., National Drug Application Form H19993256, 5mg/particle). levocarnitine, 20mg/time, 2 times/day; Coenzyme Q10, 10mg/time, 3 times/day. Both groups are treated for 7days.

1.3 Observation and judgment standard [6]

The clinical effect is assessed by reference to the curative effect criteria. Obviously effective: the symptoms of CHF are resolved, and the number of patients is improved by grade 2 or more; Effective: The symptoms of CHF are obviously reduced, and the number of patients is improved by grade 1; Noneffective: The clinical symptomsof of CHF and NYHA do not change or aggravate; Total effective rate = (obviously effective+effective)/total×100%. Cardiac parameters (LVEF), left ventricular end-systolic diameter (LVESD), left ventricular end-diastolic diameter (LVEDD), and adverse events are observed in two groups.

I.4 Statistical Analysis

SPSS21.0 software statistics, normal measurement data ($\bar{X}\pm s$) are adopted, count data group rate χ^2 test, count data are expressed by number[n(%)], group comparison is tested by t, P<0.05 means that the difference has statistical significance.

2. Results

2.1 Clinical Efficacy

The total clinic effective rate of the observation group is 95.31% higher than that of control group 81.25% (P<0.05, χ^2 = 6.1168). See Table 1. The 6min walking distance (374.38 ± 51.19) m in the observation group is much higher than that of the control group (294.31±41 39)m (P<0.05, t=9.7306).

Table 1. Comparison of Clinical Efficacy[n(%)]

Group	Obviously effective	Effective	Noneffective	Total effective
Observation Group (n=64)	40(62.50)	21(3.28)	3(4.69)	61(95.31)[a]
Control group (n=64)	32(50.00)	20(3.13)	12(18.75)	52(81.25)

Note: the comparison of two groups, [a]*P*＜0.05.

2.2 Cardiac parameters

After treatment, all cardiac parameters of the observation group are improved compared with those of the control group ($P\leq 0.05$), See Table 2.

Table 2. Comparison of cardiac parameters ($\bar{X}\pm s$)

Group	LVEF(%)	LVESD(mm)	LVESD(m)
Observation Group (n=64)	41.63±3.22[a]	47.41±10.72[a]	58.26±6.87[a]
Control group (n=64)	35.42±3.13	52.14±9.58	61.18±5.30
t	11.0632	2.6320	2.6922
aP	＜0.05	＜0.05	＜0.05

Note: the comparison of two groups, [a]*P*＜0.05.

2.3 Safety Evaluation

There is no statistical difference between the two groups during the treatment period (P> 0.05). See Table 3.

Table 3. Comparisons of Adverse Reactions [n(%)]

Group	Nausea	Vomiting	Cutaneous pruritus	Total
Observation Group (n=64)	1(1.56)	0(0.00)	1(1.56)	2(3.13)
Control group (n=64)	2(3.13)	1(1.56)	1(1.56)	4(6.25)

3. Discussion

Various heart diseases, inflammatory response and hemodynamic overload can cause myocardial injury, alter the structure and function of myocardium, cause ventricular filling, hypofunction of pump blood, and induce heart

failure[7]. The CHF refers to the persistent exhaustion of the heart force, which is a series of clinical complex diseases; heredity, hypertension and hyperlipidemia can accelerate the disease progression of the CHF; the CHF incidence is very high, higher than 3 to 4 times of normal people; the development of the CHF can reduce the pump blood function of the cardiac muscle cell and result in dysfunction of multiple organs and poor prognosis[8-9]. Therefore, it is necessary to attach importance to the prevention and treatment of CHF, so as to improve the prognosis and reduce the risk of death.

In the study, patients with severe CHF admitted to our hospital are treated by combination of levocarnitine and coenzyme Q10 on the basis of routine treatment; the results show that the total effective rate is 95.31% in the observation group, higher than that of the control group 81.25%, and 6 min walking distance is farther than that of the control group. At the same time, LVEF, LVESD and LVEDD indexes in the observation group are better than those in the control group after treatment, which is similar to the results of ?[10], suggesting that the treatment of severe CHF by the combination of levocarnitine and coenzyme Q10 is definite; the cardiac function can be improved effectively; the exercise tolerance of the patients is improved, and the curative effect is improved. The reasons for the analysis are as follows: the myocardial cells can cause oxidative stress damage in the mitochondria in the myocardia cells, destroy the myocardial cell membrane and accelerate the development of the disease by ingesting energy or impeding utilization. Levocarnitine is the essential substance of energy metabolism in vivo; its function is to promote lipid metabolism; it belongs to long chain fatty acid band into mitochondria matrix, can undergo oxidative decomposition, supply energy for the cells, and output the short chain fatty acyl group in mitochondria[11]. Levocarnitine can not only help the ischemic myocardium to do mechanical work, reduce the ST segment elevation, improve the cardiac output blood volume, inhibit the increase of LDH concentration after the myocardial infarction, and promote the reduction of the infarct size, which can also promote the improvement of the capacity metabolism of the mitochondria in the myocardial cell, the long chain structure of the oxygen-oxidizing fatty acid and the capability of increasing the myocardial cell capability, so as to correct the myocardial cell metabolism, inhibit the oxidative free radicals from destroying the cell membrane, thereby achieving the purpose of improving the cardiac function[12-13]. In the development of heart failure, mitochondrial generation and energy metabolism disorders play a key role. Many clinical practice suggests that the coenzyme Q10 content is reduced in the blood or myocardium of patients with CHF. Coenzyme Q10 is a potent antioxidant, plays an important role in the process of adenosine triphosphate production, mitochondrial respiratory chain electron transfer, and is widely used in the treatment of diabetes, cardiovascular disease, tumor immunity and neuromuscular diseases[14]. Coenzyme Q10 is an important factor for assisting in mitochondrial oxidative phosphoric acid, and is also a major component for promoting the generation of adenosine triphosphate, which is distributed in a large amount in mitochondria, wherein most of the myocardial cells are involved in the processes of phosphorylation, oxygen free radicals, stable films and energy production; coenzyme Q10 can enhance myocardial energy supply, reduce oxidative stress, prevent ventricular remodeling, and improve cardiac function. Coenzyme Q10 supplementation may also reduce the phospholipid breakdown of peripheral lymph membrane cells in patients with CHF to enhance cardiac function[15]. When the levocarnitine and the coenzyme Q10 are used together, the free radicals can be effectively eliminated; the myocardial injury can be reduced, and the damage of the myocardial endothelial cells caused by ischemia can be prevented; the myocardial ischemia reperfusion injury can be effectively protected; the fibrinogen can be prevented from coagulating; the blood TG is reduced and HDL-C concentration can be increased, providing theoretical basis for clinical treatment of severe CHF. At the same time, the results show no statistical difference between the two groups during the treatment period, indicating that the safety of the combination of levocarnitine and coenzyme Q10 is high, and the adverse reaction is not easy to increase. In the case of this study, the effects of the sample size study on inflammatory response in patients with CHF need to be further expanded by conditional restrictions.

It is concluded that the treatment of chronic heart failure combined with levocarnitine and coenzyme Q10 has significant effect; it not only promotes clinical effect, improves cardiac function, enhances exercise tolerance, but also has no obvious adverse reaction with high safety, and is worthy of popularization.

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Effect of "Arsenious Acid Combined with Retinoic Acid and Chemotherapy for Acute Promyelocytic Leukemia on Clinical Effect, Adverse Reaction and Prognosis"

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Abstract: ***Purpose:*** To observe the effects of arsenious acid combined with retinoic acid and chemotherapy for acute promyelocytic leukemia on clinical effect, adverse reaction and prognosis. ***Methods:*** the clinical data of 60 patients who received APL initial treatment from our hospital during April 2012 to September 2015 were selected, which were divided into 2 groups according to the treatment protocol; there were 30 patients in each group; in the control group, retinoic acid combined with chemotherapy drug was adopted, on the basis of which, arsenious acid chemotherapy was adopted in the observation group. The clinical effects, adverse reactions and prognosis were compared between the two groups. ***Results:*** The CR time (30.14±4.82) days in the observation group was lower than that of the control group(44.62±6.32) days; the continuous hyperleukocytosis time (10.21±3.62) days in the observation group was shorter than that of the control group (16.21±5.31) days; the negative conversion ratio of PML-RAα (89.34±6.82)% in the observation group was higher than that of the control group(76.61±7.24)%; the CR rate 86.67% in the observation group was higher than that of the control group 56.45%($P<0.05$); there was no statistical difference between the early death rate 6.67% of the observation group and 13.33% of the control group($P>0.05$). There was no statistical difference between the rates of adverse reactions of the two groups; the follow-up recurrence rate 6.67% of the observation group was lower than that of the control group 30.00%; the survival rate 73.33% of the observation group was higher than that of the control group 46.67% ($P<0.05$). ***Conclusion:*** The effects of acute promyelocytic leukemia treated by arsenious acid, retinoic acid and chemotherapy is remarkable. The combined chemotherapy can improve complete remission rate, reduce long-term recurrence rate, improve survival rate and has few adverse reactions.

Key words: Arsenious acid, retinoic acid, acute promyelocytic leukemia

Introduction

In acute myelocytic leukemia, the acute promyelocytic leukemia(APL) is more common with high incidence rates, occupying about 10% of acute myelogenous leukemia; the typical symptoms of APL are high fever, anemia, hemorrhage and easy infection[1]. APL is rapid in paroxysm; there exists disseminated intravascular coagulation in the early onset of disease, and it is easy to induce bleeding infection, thereby increasing the risk of early illness[2]. Therefore, APL patients should be induced and treated early in order to optimize prognosis. The clinically common full anti-acid type retinoic acid is used to induce chemotherapy for APL patients; the chemotherapy drugs like cytarabine, mitoxantrone, daunorubicin and homoharringtonine can be used to make a comprehensive chemotherapy during the rising period of white blood cells; the complete remission rate can be up to 90 percent; the bone marrow suppression is not obvious during the treatment process; the bleeding tendency is obvious; the recurrence rate in later stages is high[3]. In recent years, our hospital has made great progress in the curative effects when the APL patients are treated by arsenious acid in the chemotherapy process, which can reduce the recurrence of disease. Therefore, this paper studies the APL patients treated in our hospital from April 2012 to September 2015, aiming at exploring the effects of the combination therapy of retinoic acid, arsenious acid and chemotherapy, and the results are as the follows:

1. Data and Methods

1.1 General Data

The clinical data of 60 APL patients treated in our hospital from April 2012 to September 2015 are selected; the inclusion criteria are that the clinical diagnosis is consistent with Guide for Diagnosis and Treatment of Acute Promyelocytic Leukemia in China[4]. According to the standard, all APL patients are confirmed by cell chemistry, genetics, morphology and flow cytometry. All patients have high fever, skin mucous membrane or vaginal bleeding and mouth ulcer. The exclusion criteria are the patients in pregnancy, lactation period or patients with abnormal livers and kidneys or patients giving up treatment. According to the treatment plan, the patients are divided into two

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groups; there are 30 patients in the observation group; the male and female ratio is 17:13; the age is between 21-74 years old; the average age is (54.24±20.21) years old; the course of disease is 4-10 months; the average course of disease is (5.01±1.21) months; there are 30 patients in the control group; the male and female ratio is 16:14; the age is between 24-72 years old; the average age is (52.36±18.24) years old; the course of disease is 5-12 months; the average course of disease is (5.14±1.32) months; there is no statistical difference between the two groups (P>0.05).

1.2 Methods

The control group is treated with retinoic acid + chemotherapy drug: 30-60 mg of retinoic acid, once per day, it can be eaten by twice or 3 times; at first, after patients with white blood cells return to normal or improve coagulation abnormalities, they receive chemotherapy; the scheme is: patients use 40-60 mg of daunorubicin or 10 mg of mitoxantrone for 3 days, or 1-2 mg of homoharringtonine or 50-100 mg of cytosine arabinoside for 7 consecutive days for intravenous drip. The observation group is treated with the above-mentioned treatment combined with arsenious acid: 10 mg of arsenious acid is added into 500 ml of 5 percent of glucose solution; the intravenous drip lasts for 3-4 hours once a day; both groups are treated for 28 days. If white blood cells are less than 1.0×10^9/L, the growth of white blood cells is promoted by GCSF cytokines; blood platelets, fresh plasma and low molecular weight heparin are infused throughout the treatment process to support symptomatic treatment. After the remission, the observation group is treated by alternating consolidation chemotherapy with arsenious acid, retinoic acid and chemotherapy, and the high dose is consolidated for once in the cytosine arabinoside.

1.3 Observation Indicators

(1) Clinical efficacy index: complete remission rate, complete response time, continuous hyperleukaemia time, PML-RARAα GGT. (2) Adverse reactions; (3) Prognosis 1 year (recurrence and survival).

1.4 Evaluation Criteria[5,6]

Complete remission (CR) standard: There are no signs and symptoms induced by leukemic cells; the male Hb is higher than 100g/L while the female Hb is higher than 90g/L; the neutrophil value is higher than 1.5×10^9/ L; the platelet is higher than 70×10^9/L, and no leukemia cells are seen in peripheral blood cells. The contents of bone marrow primary particles and promyelocyte are less than 5%. Recurrence criteria: The contents of bone marrow primary particles and promyelocyte are more than 20% or 5%-20%.

1.5 Statistical Applications

In SPSS21.0 Statistical software analysis data, the normal measurement data is expressed by ($\bar{x}\pm s$), the group rate of counting data is tested by χ^2; the counting data is expressed by number [n(%)]; the group comparison is tested by t, P <0.05; there is statistical significance for the difference.

2. Results

2.1 Clinical Efficacy Indicators

The CR time and the time of continuous hyperleukemia in the observation group are shorter than those of the control group; the rate of PML-RARα in the observation group is higher than that of the control group(P<0.05); see Table 1. In the observation group, the early death rate is 6.67% (2/30) while the early death rate is 13.33% (4/30) in the control group; there is no statistical difference (P>0.05). The CR rate of the observation group 86.67% (26/30) is higher than that of the control group 53.33% (16/30)(P<0.05, χ^2=7.9365). See Table 1:

Table.1 Comparison of clinical efficacy indicators ($\bar{x}\pm s$)

Group	Up to CR Time (d)	Continuous hyperleukaemia time (d)	Negative conversion ratio of PML-RARα (%)
Observation group (n=30)	30.14±4.82[a]	10.21±3.62[a]	89.34±6.82[a]
Control group (n=30)	44.62±6.32	16.21±5.31	76.61±7.24
t	9.9783	5.1137	7.0101
aP	＜0.05	＜0.05	＜0.05

Note: Comparison between groups, [a]P<0.05.

2.2 Adverse Reactions There is no statistical difference between the two groups of adverse reaction rates (P>0.05), and see Table 2.

Table.2 Comparison of Adverse Reactions (n,%)

Adverse Reactions	Observation group (n=30)		Control group (n=30)	
	Number of patients	Percentage (%)	Number of patients	Percentage (%)
High white blood cell	10	33.33	11	36.67
Myelosuppression	20	66.67	20	66.67
Hepatic abnormality	6	20.00	5	16.67
Abnormal cardiac function	2	6.67	2	6.67
Gastrointestinal discomfort	4	13.33	5	16.67

2.3 Prognosis

After 1 year follow-up, the recurrence rate of the observation group was lower than that of the control group while the survival rate was higher than that of the control group (P<0.05), and the difference was obvious and was of statistically significant (P<0.05). See Table 3.

Table.3 Comparison of prognosis [n(%)]

Group	Recurrence	Survival
Observation group (n=30)	2（6.67）[a]	22（73.33）[a]
Control group (n=30)	9（30.00）	14（46.67）
χ^2	5.4545	4.4444
[a]*P*	＜0.05	＜0.05

Note: Comparison between groups, [a]P <0.05.

3. Discussion

APL is more specific in acute myeloid leukemia; the chromosomes 15 and 17 of the patients are easy to shift and be transformed into PML-RARAα fusion gene. After chemotherapy, many leukemia cells of the APL patients had a lot of apoptosis, releasing procoagulant particles, and induced the increase of mortality for DIC[7,8]. The treatment of APL is divided into three stages: induction of remission, consolidation of chemotherapy, maintenance of treatment, lasting about 2 or 3 years. APL patients are treated with all-transretinoic acid (ATRA) and arsenious acid (AS_2O_3) combined with chemotherapy, which has become the best solution for APL chemotherapy. ATRA can be directly combined with PML-RARα so as to inhibit the transcription and promote differentiation and maturation of tumor cells. AS2O3 can reduce the expression ability of bcl-2 gene in APL cells and induce apoptosis[9,10]. The complete remission rate is about 90%-93% by using retinoic acid or arsenious acid in APL-induced chemotherapy. In order to further improve the clinical therapeutic effect, our hospital has achieved good effect on the combination of retinoic acid with arsenious acid and chemotherapy drugs.

In this study, the CR time and continuous hyperleukemia time in the observation group are lower than those of the control group, the negative conversion ratio of PML-RARα is higher than that of the control group; the CR rate 87. 10% is higher than that of the control group56.45%. It is similar to the result of Tao Xiaoming[11]. It is suggested that the effect of arsenious acid and retinoic acid combined with chemotherapy for APL is remarkable and can accelerate the remission as well as improve the complete remission rate. The reasons of the analysis are as follows: Retinoic acid can stimulate the fusion protein of PML-RALα, prevent the retardation of cell differentiation, accelerate the maturation of promyelocyte, and play a role in resisting APL. Retinoic acid-induced treatment generally does not cause severe bone marrow suppression in patients; it can reduce infection and bleeding probability, but it still has limitations; the complete response time is long, increases the resistance of retinoic acid to patients, causes retinoic acid syndrome, and affects the curative effect[12,13]. Arsenious acid (arsenic trioxide) is a traditional Chinese medicine, commonly known as “white arsenic” which can induce the differentiation and apoptosis of promyelocyte, stimulate the part of PML, reduce the PML-RARα’s production of fusion protein; combined with retinoic acid, it can play a synergistic role, enhance the differentiation effect, improve the sensitivity between the two drugs, and does not generate cross-resistance[14]. The advantages of combination therapy of two drugs may be as follows: ① Dual-induction chemotherapy can enhance the obstruction of differentiation of promyelocytes and white blood cells, inhibit the proliferation and reduce the duration of drug effect; ② the effects of the intravenous injection drugs are quick; ③ The effect of double induction therapy on preventing APL cells from producing coagulation-promoting substances is extremely strong; the coagulation of the patients is accelerated to normal and the prognosis effect is improved; the risk of early death is reduced[15,16,17]. In addition, some scholars have found that when the concentration of arsenious acid is low, its pharmacological action mainly focus on inducing differentiation; when the concentration of arsenious acid is increased, apoptosis can be induced; the mechanism of the study may have physiological effects on degrading the fusion protein of PML-RALα[18]. In addition, when the treatment is supplemented by symptomatic treatment such as platelets, plasma and low molecular weight heparin; the correction of abnormal coagulation can be accelerated, and the patient is prevented from dying due to intracranial hemorrhage. The recurrence rate of the observation group 6.67% was lower than that of the control group 30.00% after 1 year follow-up, and the survival rate 73.33% was higher than that of the control group 46.67%. It shows that the feasibility of the combined induction remission treatment regimen is high, the quality of life of the patient can be optimized, and the later relapse can be avoided.

In this study, there are fewer gastrointestinal disorders in the two groups, which may be related to the use of a drug like antagonistic 5- hydroxytryptamine 3 receptor in the treatment, which can be used for anti-vomiting. There are high white blood cells in both groups, but there is no high white blood cell syndrome, considered to be related to early control of high white blood cells and continued use of chemotherapeutic agents. In addition, there is abnormal cardiac function in both groups; it improves after symptomatic treatment, and doesn’t influence clinical treatment. In order to ensure the effectiveness of treatment, attention should be paid to patient discomfort during treatment and abnormal symptoms should be treated in time; after the remission of APL is complete, PML-RARα can be observed on a regular basis, and the recurrence of molecular biology can be detected as soon as possible, thus preventing hematological recurrence. The effect of the combined treatment regimen on the coagulation index of APL patients is subject to

further investigation.

In conclusion, the clinical effect of arsenious acid combined with retinoic acid and chemotherapy in patients with acute promyelocytic leukemia is remarkable, which is beneficial to complete remission of disease, reduce recurrence, promote survival rate and improve prognosis.

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Study on Simulated Evaluation Method of Sealing Characteristics of Micro-cracks in Shale

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Abstract: During the drilling process, 90% of the borehole wall instability problems occurred in the mud shale formation mainly due to mud shale bedding and micro-cracks development. The drilling fluid intrusion will cause exfoliation of the cuttings as well as the dispersion of rock mass, which easily lead to wall instability. As for the water-based drilling fluid blocking agent, blocking technology has been the focus of the research. Nowadays one of the main reasons that it is difficult to have major breakthroughs in blocking problems is the absence of a unified and effective evaluation method. Existing evaluation methods are only applicable to specific objects and environment. At present, in spite of the increasing demand of the development of shale gas, there is no sealing evaluation aiming at ultra-low permeability formation of nanoscale micro-cracks. On the basis of the seniors' research, new ideas are expanded in this article that artificial cracks are made on artificial mud cakes, focusing on the preparation of it, evaluating its sealing characteristics by simulating micro-cracks of the formation and controlling the permeability of mud cake by controlling the quality and strength of it with experimental methods so that the permeability will be very close to the real permeability in mud shale. As a result, the purpose of simulating low-permeability environment is achieved. The establishment of the evaluation method is of great significance to the selection, development and evaluation of the plugging effect of blocking agent and applicable to the evaluation of the plugging performance of other kinds of fractured formation.

Key words: Shale, micro-crack, sealing characteristics, evaluation method

Introduction

During the process of drilling and development of oil and gas wells, more than 90% of the borehole instability problems occurred in the shale section (Jieshu et al,2017). The main reason is that with the rich development in the shale, micro-cracks continue to develop and expand along its vertical and horizontal directions due to hydration swelling of the clay when encountering water, which result in macroscopic cracks, instability and even collapse of borehole (Lei et al,2017;Xiao et al,2017). To solve this technical problem, effective drilling fluid plugging materials must be used to seal micro-cracks, prevent drilling fluid filtrate intrusion, stabilize the borehole and protect the reservoir (Zhengsong et al,2016). A lot of related research have been carried out at home and abroad.Some new treatment agent have been developed ,for example,polyalcohol blocking agent that can enter micro-cracks in shale and block it (Zhengsong et al,2015).

However, as for the evaluation method of drilling fluid blocking agent, especially the evaluation method of fracture plugging, an effective and unified standard has not formed at home and abroad (Bingzhong et al,2014). At present, main methods of simulating plugging experiment of micro-cracks in shale are cracked steel sheet sealing test, split rock specimen artificial cracks simulation plugging test and split rock specimen combining with steel block sleeve method (Jiali et al,2016). These methods can directly simulate rock cracks well and evaluate the plugging performance of drilling fluid blocking agent basically. However, these methods have the disadvantages of complicated operation, poor reproducibility of experiments and high experimental cost (Jie,2017). Based on the previous research, the author summarizes the advantages and disadvantages of various methods and put forward a simple, high efficient and reproducible simulated evaluation method to study plugging performance of micro-cracks in shale with mud cake.

1. The preparation of mud cake to simulate low-permeability of shale

To simulate the actual situation of micro-cracks in formation shale, the physical environment of the shale should be

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Yuexin Tian (1991-) is now a graduate student of the Southwest Petroleum University Oil and Gas Well project, now engaged in drilling fluid completion fluid research work. In this paper, he had made contributions to acquisition of data, analysis and interpretation of data and submit this paper.

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established firstly. From the point of view of the sealing characteristics, the first step is to simulate the low-permeability environment to make mud cakes with low permeability of 10^{-3} ~ 10^{-5}mD which is close to the real permeability range in shale. In the drilling fluid filtration experiment, it is found that mud cake is formed on filter paper which is accumulated of solid particles in drilling fluid (Shenghong et al,2016). In the process of water loss, the average water loss per minute decreases over time, mainly due to the fact that the accumulation of mud cake as time goes on results in an increase in the thickness of it. According to Darcy's Law, infiltration media is changed from the quality of the filter to the strength of the cake, so that in the later period, the main influence factor of permeability will be changed from the quality of filter paper to the strength of mud cake. The permeability of mud cake can be controlled by the quality of the cake.

1.1 Preparation of low - permeability mud cake

The main material of the experiment include Bentonite, API barite powder, 1250 mesh calcium carbonate, 2200 mesh calcium carbonate, Polyacrylamide PAM and Polyacrylic acid sodium PAAS.

At the same time,the main experiment instrument include Electronic balance, 42 high temperature and high pressure water loss instrument and JC101 electric blast oven.

Cake-making

The first is to prepare curing base mud. Taking appropriate amount of tap water in the container, adding appropriate amount of bentonite and calcium carbonate, mixing fully and standing for 24 hours to cure.

(1) Taking 300ml cured 8% base mud in the container, adding 75% barite powder for drilling fluid, 50% micro barite powder, 20% 1250 orders and 5% 2200 orders calcium carbonate, 1% polyacrylamide and 5% sodium polyacrylate, and stirring at a high speed of 13000 r / min for 25 minutes. Then stirring at a speed of 600 r / min for 2 hours with an ordinary low-speed blender to disperse it well.

(2) Pouring the prepared mud into a high pressure high temperature filter tester and filtering it for 30 minutes at a pressure of 3.5 MPa. And then opening the instrument to pour out the supernatant and placing the remaining part in an electric blast oven to air dry.

1.2 Determination of permeability of cake

(1) When the mud cake is molded but not solidified yet, adding distilled water to high pressure high temperature filter tester with a glass rod to drain to the upper line of it. At room temperature and the pressure of 3.5Mpa, respectively, determining the filtration loss of mud cake in 10 minutes, 20 minutes and 30minutes and recording them as V_1, V_2, V_3.

(2) Determining the mud cake thickness after 30 minutes and recording it as h. And then calculating K, the permeability of mud cake, according to the formula.

Formula for calculating mud cake permeability K:

The formula Eq. (4) is obtained by the Darcy percolation formula Eq. (1), the relation of the solid phase and the liquid volume Eq. (2) and Eq. (3) in the drilling.

$$\frac{dV_f}{dt} = \frac{KA\Delta p}{\mu h_{mc}} \tag{1}$$

$$V_m = V_f + V_c = V_f + Ah_{mc} \tag{2}$$

$$\frac{V_c}{V_f} = R \tag{3}$$

$$V_f{}^2 = \frac{2K\Delta pt}{\mu} \cdot \frac{V_f}{V_c} \tag{4}$$

From Eq. (4): $$K = \frac{V_f \mu h}{2A\Delta pt} = \frac{\overline{Q}\mu h}{2A\Delta p} \tag{5}$$

Converting units in Eq. (5) to ones that is commonly used in laboratory

Substituting it to $h_{mc} = \frac{V_c}{A}$, at the same time, converting k(μm^2) to 10^3k (mD); h (cm) to 0.1h (mm);

Accordingly:

Accordingly: $$K = \frac{0.1V_f \mu h}{2A\Delta pt} \times 10^3 \tag{6}$$

Conditions of water loss at high temperature and high pressure:

A=25.3cm^2; Δp =35kg·cm^{-2}; t=1800s; μ (25℃) =0.89mPa·s; μ (90℃) =0.31mPa·s

According to the formula above, we have done a lot of experiments and draw a conclusion that the mud cake permeability can be controlled at the range of 7 × 10^{-4}mD ~ 1 × 10^{-3}mD and the thickness of the cake can be controlled at 4 ~ 6mm.

1.3 Comparison of artificial low - permeability mud cake with natural shale core

The artificial low-permeability mud cake prepared by the above method was compared with the natural shale core from the Silurian Longmaixi Formation in Changning area. Experimental test indicates that the minimum permeability of the mud cake prepared in laboratory is 5.042 × 10^{-4}mD, while that of

the shale core in Longmaxi Formation is 3.853×10^{-4}mD. Scanned pictures from the scanning electron microscopy show that the maximum crack width of the surface of the mud cake prepared in the laboratory was 13.28μm while that of the natural core was 10.51μm. We can see that the maximum crack width of the two was similar, but there are more holes and cracks in mud cake prepared in laboratory than that in natural core, so this is one of the reasons that the permeability of prepared mud cake is bigger than that of natural core.

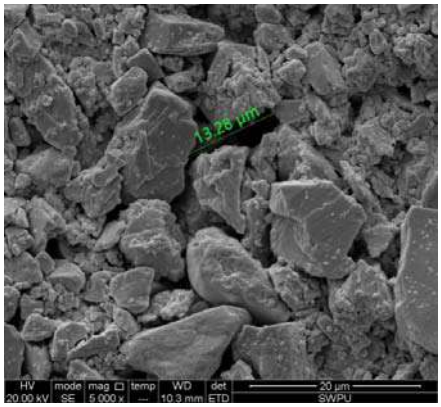


Fig. 1 Artificial mud cake surface

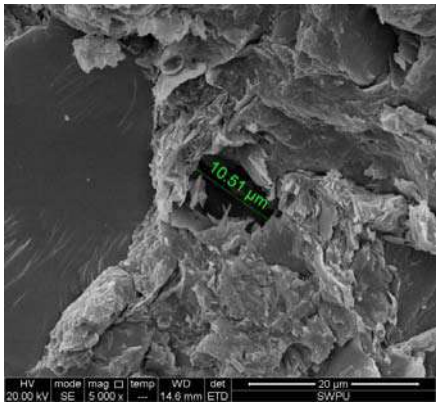


Fig. 2 Natural shale core surface

As the permeability of mud cake prepared in laboratory is close to that of natural core and the crack width is in the same order of magnitude, it is considered that mud cake prepared in laboratory can replace natural core in micro-cracks simulation and sealing evaluation experiments.

2. Simulation of micro - cracks of shale

So far, there is no uniform method for core simulation. Methods of coring directly and preparing core in laboratory are generally used in laboratory to do experiment of simulating pores and cracks. However, there is no valid laboratory simulation method for the shale of micro-crack development (Hongwei et al,2015). In this paper, considering the characteristics of the shale, cracks were made artificially by needling on mud cake under low permeability condition, which means puncturing silver needle into the mud cake. If the width of crack and pores and be controlled by this means, then it will be very close to the real infiltration environment in mud shale.

The permeability determined when preparing low-permeability mud cake is recorded as K_1, and then puncturing the newly formed but not solidified mud cake with the prepared ultra-fine silver needle from one side of filter, where standard puncture operation means that mud cake was completely pricked without secondary damage. After the puncture operation, replacing new filter paper, determining the water loss with this mud cake again, calculating the permeability of mud cake and recording it as K_2.

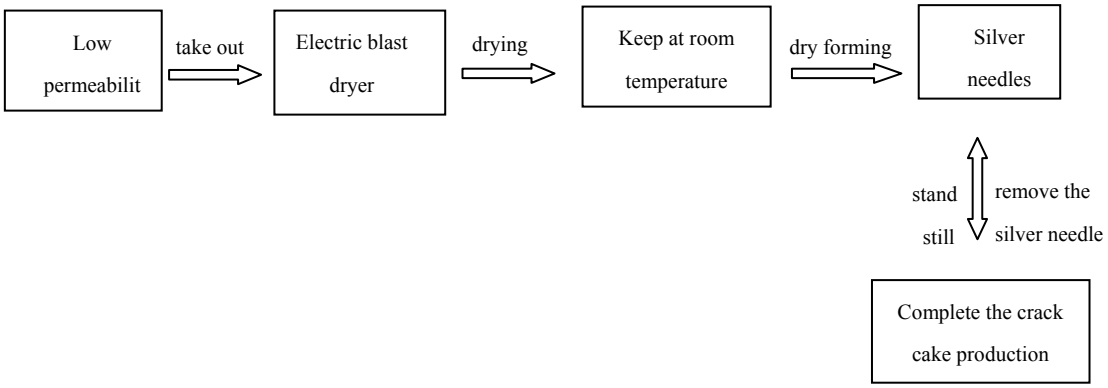
2.1 Preparation of cracks

Preparation steps

(1) Taking the mud cake made prepared before out of the HTHP filter tester and putting it into the electric blast oven to dry.

(2) After a period of time, removing the mud cake from the electric blast oven and standing it at room temperature. When the cake is dried and solidified, puncturing it with silver needles at a designed insertion angle.

(3) Standing the mud cake at room temperature for 1.5 ~ 3h and then removing silver needles, so the cake with cracks is completed.



2.2 Determination of crack opening

When metal silver needles are used for puncture and

stitching, the width of the artificial cracks created will be

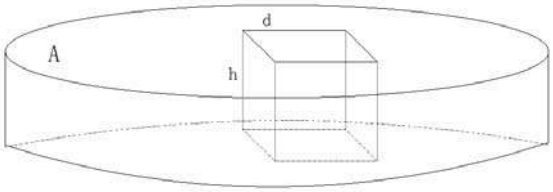


Fig. 3 Microscopic view of cracks

As shown in Fig3, assuming that the area of mud cake is **A**, the opening of artificial crack is **d** and the thickness of mud cake (the depth of the artificial cracks)is **h**, based on the hypothesis that the length and width of the crack is constant, the seepage of fluid is steady when flowing through cracks and the increase of the permeability of the mud cake is caused by the crack only, which means the seepage type of mud cake is pore-crack double medium seepage, and the total flow is Q_t, the pore flow is Q_m, and the crack flow is Q_f, then there are:

$$Q_t = Q_t - Q_m \tag{7}$$

According to the Boussillack equation(Lidong et al,2014) (assuming that the crack section is a square with a length of d), the liquid flow flowing through a unit length of crack is:

$$q = \frac{d^4}{12\mu} \cdot \frac{dp}{dx} \tag{8}$$

The liquid flow flowing through n cracks with a length of c:

$$Q_f = nq = \frac{nd^4}{12\mu} \cdot \frac{dp}{dx} \tag{9}$$

$$Q_f = \frac{AK_f}{\mu} \cdot \frac{dp}{dx} \tag{10}$$

The crack permeability is:

$$K_f = \frac{nd^4}{12A} \tag{11}$$

According to Darcy's Law, the permeability of cracks on mud cake:

$$K_f = \frac{\mu Q_f h}{A\Delta p} \tag{12}$$

Accordingly:

$$\frac{nd^4}{12A} = \frac{\mu Q_f h}{A\Delta p} \tag{13}$$

The formula for the crack opening is:

$$nd = \sqrt[4]{\frac{12Q_f \mu h}{\Delta p}} = \sqrt[4]{\frac{12V_f \mu h}{\Delta pt}} \tag{14}$$

Converting units in Eq. (14) to ones that is commonly used in laboratory, μ (Pa.s) to 103 μ (mPa.s), Δp (Pa) to10-5 (MPa) , and at the same time, adding experimental conditions of high temperature，high pressure and dehydration:

A=25.3cm2；Δp =3.5MPa；t=1800s；m（25℃）=0.89mPa·s；m（90℃）=0.31mPa·s

Accordingly:

$$nd = \sqrt[4]{\frac{12Q_f \mu h}{\Delta p}} = \sqrt[4]{\frac{12V_f \mu h}{\Delta pt}} = 0.03715\sqrt[4]{V_f \mu h}$$

$$d = \frac{0.03715\sqrt[4]{V_f \mu h}}{n} \tag{15}$$

2.3 Influencing factors of micro -crack opening

(1) Effect of Drying Time on Cracks

In the process of puncturing mud cake prepared in laboratory with silver needles, the formation of the cake affected the simulation of crack. If the mud cake is not completely dry and its surface is still wet, then the strength and toughness of the mud cake will be insufficient, which leads to the result that cracks will be closed after silver needle puncturing it. So taking the factors above into account, the prepared cake was heated and air dried in an electric blast oven.

Table.1 Drying time and water permeability of mud cake

Heating time **(h)**	Thickness of mud cake **(mm)**	The water loss before puncture **(mm)**	Water permeability of mud cake before puncture **(mD)**	The water loss after puncture **(mm)**	Water permeability of mud cake after puncture **(mD)**	Crack opening **(dm)**

0.5	4.3	5.6	0.000672	8.8	0.001056	3.91×10^{-5}
1	4.7	5.3	0.000695	10.0	0.001312	4.40×10^{-5}
2	5.3	4.9	0.000725	9.3	0.001376	4.46×10^{-5}
3	5.1	5.1	0.000712	9.7	0.001381	4.47×10^{-5}

Note: In order to protect the structure and nature of prepared mud cake from the damage at long-term high temperature, the heating temperature should not exceed 50℃, therefore, the heating temperature is 50℃ here. The diameter of the silver needle is 0.25mm, the number of cracks is 10, and the crack arrangement is linear vertically.

Fig. 4 Mud cake after 0.5 hours' heating

Fig. 5 Mud cake after 3 hours' heating

Through the above experimental data and pictures, we can see that the mud cake molding is influenced by the heating time in the heating and air drying operation. if the heating time is too short, the cake will not get dry enough to mold, while if the heating time is too long, the mud cake will solidify and crack. From the above data, 1 to 2 hours' heating is appropriate at 50℃.

(2) The relationship between crack closing and time

It is found in the experiment that at 3.5Mpa pressure cracks will close that results in the decrease of mud cake permeability due to continuous erosion of water ,which results from that it has not fully molded yet in the process of determining water permeability of mud cake after puncturing(Pingquan et al,2012). According to the above, mud cakes after 1-2 hours' heating are the best in the determination of water permeability. In order to make the relationship between the crack closing and time clear, several groups data of water filtration loss of mud cake at different time points have been determined.

Table.2 Relationship Table of Crack Closing and Time

Heating time **(h)**	Average water loss before punctue **(ml)**	Water loss at 5 min **(ml)**	Water loss at 10 min **(ml)**	Water loss at 20 min **(ml)**	Total water loss after punctue **(ml)**
1	4.3	6.3	7.6	8.4	8.9
1	4.7	7.8	8.4	9.2	9.5
1	4.1	5.7	6.6	7.2	7.5
1.5	4.9	5.3	7.1	8.0	11.4
1.5	5.1	6.7	8.0	8.8	10.5
1.5	4.5	6.6	8.2	9.0	10.3
2	5.2	7.5	9.6	11.2	14
2	4.4	8.3	10.1	12.5	15.3
2	4.7	7.9	10.7	13.5	16.2

Note: In order to protect the structure and nature of prepared mud cake from the damage at long-term high temperature, the heating temperature should not exceed 50℃, therefore, the heating temperature is 50 ℃ here. The diameter of the silver needle is 0.25mm, the number of cracks is 10 and the crack arrangement is linear vertically.

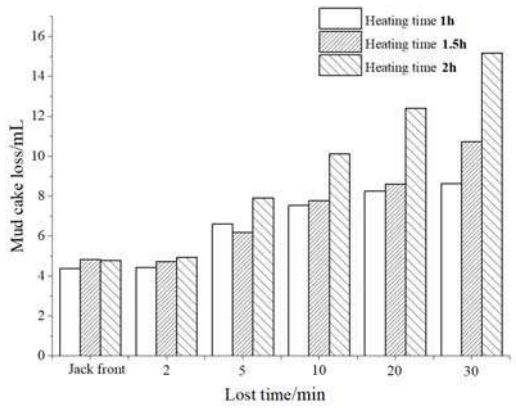


Fig. 6 Loss of water within 30 minutes of mudcakes with different heating times

According to the above experiment can be seen. The water loss in the mudcake heated for 1h and part of 1.5h was higher. However, as the time passed, the water loss of the mudcake gradually decreased until the flow rate of the lost water was close to the flow rate before mud cake making, and the amount of water loss and time were simple. The linear relationship indicates that the cracks in the mud cake finally closed. However, the permeability of mudcake produced by heating was significantly higher after heating for 2h, and the relationship between water loss and time of the mud cake was approximately linear, indicating that the crack did not block again during the water loss process. So we can determine the exact heating time is 2h.

2.4 Effect of micro - cracks on permeability of mud cake

From the above experiment, we can preliminarily simulate shale mud cake with micro-crack properties whose permeability can be controlled at 7×10^{-4}mD ~ 1×10^{-3}mD and thickness in 4mm ~ 6mm by the simple and mature means. The best time to form mud cake can be mastered by controlling the heating time and that is conducive to the puncture operation with silver needle.

Now in order to study the impact of cracks on the permeability of mud cake further, research is done from three aspects, number of cracks, insertion angle and puncture arrangement.

(1) The influence of the number of cracks on the permeability of mud cake

Selecting a 0.25mm diameter metal silver needle to perform the manual stitching operation. The arrangement is linear, starting from the center of the filter paper to create the stitching point, and then proceeding along each side of the straight line, every 5mm at a time, and the direction of the hole is 90° vertical. The number of seam making operations was 5, 9, 13, and 17, respectively, and then the cleanability of mud cakes was measured. The results are shown in Table3.

Table. 3 Water loss of mud cake with different number of cracks

Number of cracks	Average water loss before puncture **(ml)**	Average water loss after puncture **(ml)**	Water permeability of mud cake after puncture **(mD)**	Crack opening **(dm)**
20	4.9	65.2	0.008191	4.12×10^{-5}
17	5.1	52.4	0.006583	4.56×10^{-5}
13	4.6	36.5	0.004586	5.40×10^{-5}
9	4.5	12.4	0.001558	5.51×10^{-5}
5	4.4	7.8	0.000980	8.03×10^{-5}

Note: The average thickness of the foundation cake is 4.5mm, and the stitch diameter is 0.25mm. Both are inserted vertically at 90°. The arrangement of the jacks is linear.

From the above experiments, it can be seen that the number of seams in the socket is positively related to the permeability of the cake. That is, the greater the number of cracks, the greater the loss of water. It shows that the degree of fracture development has a great influence on the permeability of shale. When drilling into shale formations, fine fractures can also cause drilling fluid to invade the formation. According to the experimental results, when the number of stitches made of silver needles was increased from 5 to 20, the equivalent crack width ranged from 8.03×10^{-5}m to 4.12×10^{-5}m, and when the number of seam making jacks was 9, the loss after the seam was made. The amount of water can reach 16.4 mL, and the width of each crack is about 5.51×10^{-5}m. At this time, with the increase in the number of joints made, the equivalent crack width does not change much, and they are all concentrated at about 50 μm. Therefore, we chose the best number of joints to make 9. Of

course, the direct difference of the silver needle will inevitably be to the mud cake, so we will continue to study the influence of different diameters of silver needles on the mud cake.

(2) The influence of crack width on the permeability of mud cake

In the actual drilling process of shale, drilling fluid flow into the surrounding strata through very small micro-crack. This shows that the width of cracks have a great impact on the permeability of the shale, so we study the impact of cracks with different diameter on mud cake permeability. Silver needle with different diameter were used to make cracks with different diameter. The next is to puncture 9 pores in vertical direction and determine the water permeability of mud cake under respective conditions. The results are shown in Table4.

Table. 4 Water loss of mud cake after puncture with silver needles of different diameter

Silver needle diameter **(mm)**	Average water loss before puncture **(ml)**	Average water loss after puncture **(ml)**	Water permeability of mud cake after puncture **(mD)**	Crack opening **(dm)**
0.18	4.5	10.2	0.001282	5.07×10^{-5}
0.25	4.3	13.1	0.001646	5.66×10^{-5}
0.30	5.2	15.2	0.001910	5.84×10^{-5}
0.35	5.5	16.6	0.002086	5.99×10^{-5}
0.40	4.8	19.8	0.002488	6.46×10^{-5}

Note: The average thickness of the foundation cake is 4.5mm, and the number of stitches is 9 and all 90° vertical insertion sockets are linear.

It can be seen from the table data that the water loss of the cake increases with the increase of the diameter of silver needle, that is, the permeability of the cake will increase with the increase of the diameter of the crack, which is consistent with the conclusion of relevant articles.

(3) The influence of crack angle on the permeability of mud cake

When the clear water penetrates through the cracks of the mud cake, the length of the clear water flows is different due to the different tilt angles of the cracks, and the friction resistance of the clear water in the crack is also not the same. We change the inclination angle by controlling the angle of insertion of the metal needle. We use straight seams to make cracks at a number of 90°, 60°, 45°, and 30°, and investigate the effect on the permeability of the cake.

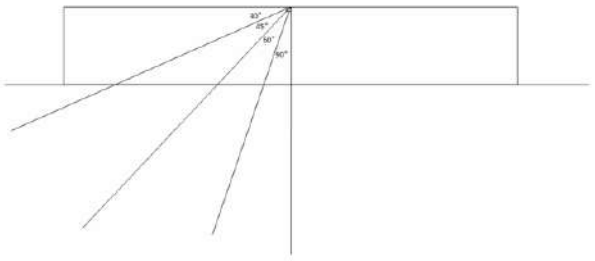


Fig.7 Schematic diagram of the insertion of mud cake at different angles

Through the above methods, the tilt angle of each artificial joint is effectively controlled. At the same time, for the effectiveness of the experiment, we control the mud cake thickness to about 8 mm. The experimental results are as follows:

Table.5 Different cracks in the dip after the mud cake water loss situation

Insertion angle **(mm)**	Average water loss before puncture **(ml)**	Average water loss after puncture **(ml)**	Water permeability of mud cake after puncture **(mD)**	Crack opening **(dm)**
30°	4.7	12.7	0.001596	5.52×10^{-5}
45°	5.0	13.4	0.001684	5.59×10^{-5}
60°	5.3	13.9	0.001746	5.62×10^{-5}
90°	4.9	12.1	0.001520	5.38×10^{-5}

Note: Number of cracks are 9 and the use of silver needle diameter are selected 0.25mm.

Through the table data we can see that the fracture is 90 °, the mud cake water loss is the largest, 30 ° of the water loss is the least. This is because the smaller the inclination of the cracks, the longer the passage of water through the cracks, the longer the duration of friction between the water and the cracks, and the adsorption of clay and the clay through the channel. Increased, so that the surface of the clay surface free energy greater, so that it produces a strong adsorption capacity, resulting in narrowing of the cracks channel to prevent further passage of water, it will cause moisture in the cracks in the impact of water loss.

(4) The influence of crack arrangement on the permeability of mud cake

Experiments above is on the basis of linear crack ,and the next study is that whether different arrangement of cracks will affect the permeability of mud cake. Therefore, four arrangement are designed for the research: linear type, matrix type, circumferential type and cross type. Respective arrangement criteria are as follows:

Linear type: Starting from the center of filter paper and puncturing cracks along one direction at the distance of 5mm;

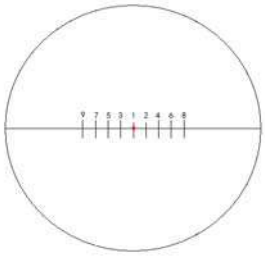
Matrix type: Starting from the center of filter paper and puncturing cracks in the edge of the filter paper along the diagonal direction at the distance of 5mm;

Circle type: with the center of the filter paper as the center and the radius of 15mm, puncturing cracks along the circumference at an appropriate distance;

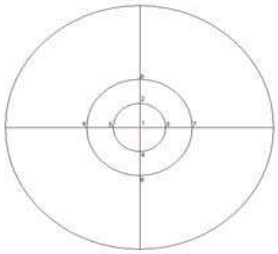
Cross type: starting from the center of filter paper, puncturing in the edge of the filter paper along the direction of the cross at the distance of 5mm.

(Note: puncturing direction in each crack is vertical)

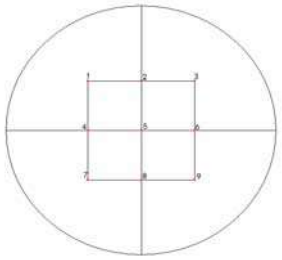
The water permeability of each cake is then determined and the results are shown in the table.



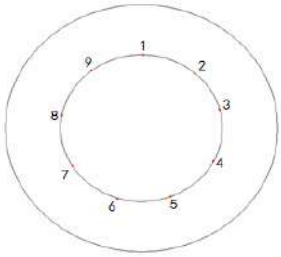
Linear type



Cross type



Matrix type



Circle type

Table.6 Water loss of mud cake with different arrangement

Cracks arrangement	Average water loss before puncture **(ml)**	Average water loss after puncture **(ml)**	Water permeability of mud cake after puncture **(mD)**	Crack opening **(dm)**
Linear type	4.8	13.4	0.001684	5.62×10^{-5}
Cross type	4.6	12.5	0.001570	5.51×10^{-5}
Matrix type	5.1	13.9	0.001746	5.66×10^{-5}
Circle type	5.2	12.8	0.001608	5.45×10^{-5}

Note: The number of holes per mudcake was 9 and the diameter of the silver needle used was 0.25mm, and the average thickness of the ground mud cake was 4.5mm, both being inserted vertically at 90°.

According to the table data, it is found that the water loss of the mud cake is not much different in the four arrangement modes. The possible reason is that within appropriate crack length, the interference of the crack fluid in the same plane and the same flow direction is very little, so there is no similar phenomenon to interwell seepage interference.

Conclusions

1. The simulatio of the actual permeability environment of mud shale in low-permeability strata can be achieved by preparing low-permeability mud cake in laboratory. Its effective permeability can be controlled at 7×10^{-4}mD ~ 1×10^{-3}mD and mud cake thickness can be controlled in 4mm ~ 6mm.

2. On the basis of the preparation of low-permeability mud cake, making artificial cracks with silver needle and controlling the width of the cracks to achieve the purpose of simulating real cracks.

3. The factors influencing the permeability of the cake are

the heating time, the number of cracks and the width of the crack, but the arrangement of cracks does not make much difference.

4. In this paper, the number of joints is 9, the heating time is 2 hours, the inclination angle is 90 ° and the arrangement of cracks is matrix type as the simulation standard of fracture.

Nomenclature

h_{mc}	Thickness of mud cake, cm;
V_m	Total volume of drilling fluid, cm^3;
V_f	Filtrate volume, cm^3;
V_c	Mud cake volume, cm^3;
k	Mud cake permeability, μm^2;
μ	Filtrate viscosity, mPa·s
h	Mud cake thickness, mm;
R	Proportional constant, no unit;
m	Filtrate fluid viscosity, mPa·s ;
t	Diafiltration time, s;
$\frac{\Delta p}{Q}$	Diafiltration pressure, $kg \cdot cm^{-2}$; Average traffic per second, $cm^3 \cdot s^{-1}$;
A	Diafiltration pressure area, cm^2;
Q_t	Total seepage flow of mud cake, $m^3 \cdot s^{-1}$;
Q_m	Pore seepage flow, $m^3 \cdot s^{-1}$;
Q_f	Crack seepage flow, $m^3 \cdot s^{-1}$;
q	Crack seepage flow per unit length, $m^3 \cdot s^{-1}$;
m	Viscosity of filtrate fluid, Pa.s ;
d	Crack opening, m;
h	Crack depth, m;
n	Number of cracks;
K_f	Permeability of mud cake crack , μm^2;

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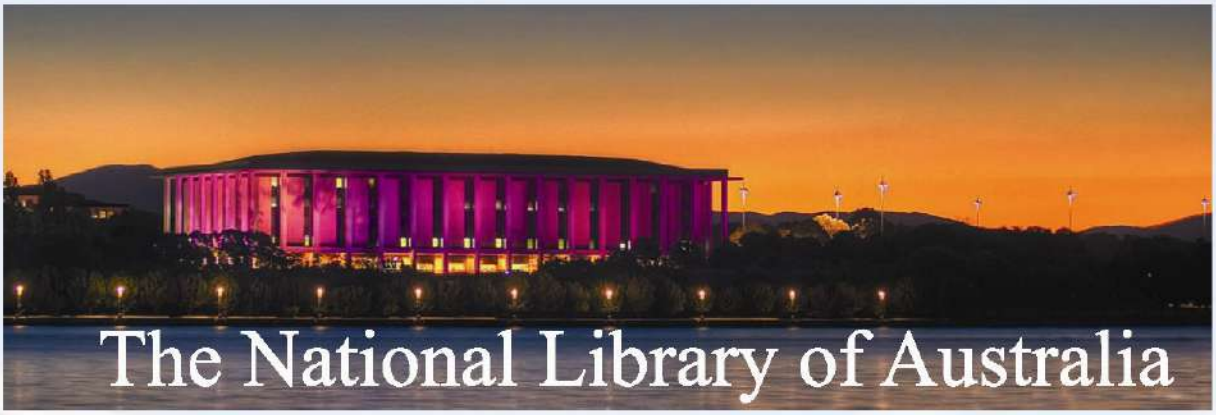

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